CHAS R THOMAS,
President N. C. Pharmaceutical Association

PROCEEDINGS

OF THE

TWENTY-EIGHTH ANNUAL MEETING

OF THE

North Carolina Pharmaceutical Association

HELD AT

LAKE TOXAWAY, JUNE 13-14, 1907.

ALSO THE

CONSTITUTION, BY-LAWS, CODE OF ETHICS, ROLL OF MEMBERS AND THE STATE PHARMACY LAW, WITH LIST OF REGISTERED PHARMACISTS.

DURHAM, N. C.
PRESS OF THE SEEMAN PRINTERY
1907

PREPARATORY NOTES.

For blank applications for membership, write to the Secretary, P. W. Vaughan, Durham.

In case of the death of a member coming to your notice, advise the Secretary, giving such particulars as may be desirable to publish.

If you find your name omitted or incorrectly spelled, or your address erroneously given, notify the Secretary at once, giving your full name and address.

For information concerning Examinations, the State Pharmacy Law and its enforcement, and Certificates of Registration, address F. W. Hancock, Secretary Board Pharmacy, Oxford.

Take notice of the advertisers who have liberally responded to requests of advertisements, mentioning the Proceedings in your correspondence with them. You can render no better service to the Association.

OFFICERS, COMMITTEES AND DELEGATES.

1907-1908.

OFFICERS:

PRESIDENT.

CHAS. R. THOMAS.....THOMASVILLE.

VICE-PRESIDENTS.

J. E. SHELL.....LENOIR.
G. Y. WATSON.....SOUTHPORT.
W. H. JUSTUS.....HENDERSONVILLE.

SECRETARY.

P. W. VAUGHAN.....DURHAM.

TREASURER.

G. K. GRANTHAM.....DUNN.

EXECUTIVE COMMITTEE.

H. T. HICKS.....RALEIGH.
F. S. SMITH.....ASHEVILLE.
C. E. KING.....DURHAM.
T. R. HOOD.....SMITHFIELD.
P. W. VAUGHAN, *ex officio*.....DURHAM.

REPORTER ON PROGRESS OF PHARMACY.

E. V. HOWELL.....CHAPEL HILL.

LOCAL SECRETARY.

B. R. DAVIS.....NEW BERN.

COMMITTEES:

PAPERS AND QUERIES.

B. FRANK PAGE, Chairman.....GREENSBORO.
I. W. ROSE.....ROCKY MOUNT.
H. L. KING.....DURHAM.

TRADE INTERESTS.

FRANK L. CARPENTER, Chairman.....KING'S MOUNTAIN.
JOHN M. SCOTT.....CHARLOTTE.
R. A. TURLINGTON.....WILSON.

LEGISLATION.

F. W. HANCOCK, Chairman.....Oxford.
W. W. HORNE.....Fayetteville.
C. B. MILLER.....Goldsboro.
C. D. BRADHAM.....New Bern.
E. V. ZOELLER.....Tarboro.

ADULTERATIONS.

C. B. MILLER, Chairman.....Goldsboro.
HOWARD GARDNER.....Greensboro.
R. R. BELLAMY.....Wilmington.

PREREQUISITE BILL.

H. T. HICKS, Chairman.....Raleigh.
W. D. HOOD.....Kinston.
W. M. YEARBY.....Durham.

DELEGATES:

AMERICAN PHARMACEUTICAL ASSOCIATION.

F. W. HANCOCK, Chairman.....Oxford.
C. D. BRADHAM.....New Bern.
W. W. HORNE.....Fayetteville.
E. V. HOWELL.....Chapel Hill.
E. V. ZOELLER.....Tarboro.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

C. A. RAYSOR, Chairman.....Asheville.
W. A. RING.....High Point.
W. H. JUSTUS.....Hendersonville.
G. K. GRANTHAM.....Dunn.
J. P. WOODALL.....Charlotte.

VIRGINIA PHARMACEUTICAL ASSOCIATION.

J. E. HOOD, Chairman.....Kinston.
W. F. WELBORN.....Lexington.
W. A. LEGGETT.....Edenton.
G. R. PILKINGTON.....Pittsboro.

SOUTH CAROLINA PHARMACEUTICAL ASSOCIATION.

F. C. PARSONS, Chairman.....Wadesboro.
WILLIAM NEISTLIE.....Wilmington.
ROBERT SIMPSON.....Raleigh.

MARYLAND PHARMACEUTICAL ASSOCIATION.

P. W. VAUGHAN.....Durham.
G. K. GRANTHAM.....Durham.
E. V. ZOELLER.....Tarboro.
GEO. W. BRITTON.....Reidsville.

OFFICERS OF THE ASSOCIATION

SINCE ITS ORGANIZATION.

PRESIDENTS.

E. M. Nadal	Wilson	1880-1881
S. J. Hinsdale	Fayetteville	1881-1882
William Simpson	Raleigh	1882-1883
W. H. Green	Wilmington	1883-1884
V. O. Thompson	Winston	1884-1885
H. R. Horne	Fayetteville	1885-1886
A. W. Rowland	Wilson	1886-1887
F. W. Hancock	New Bern	1887-1888
T. D. Crawford	Oxford	1888-1889
J. D. Croom	Maxton	1889-1890
E. V. Zoeller	Tarboro	1890-1891
W. H. Wearn	Charlotte	1891-1892
H. R. Chears	Plymouth	1892-1893
N. D. Fetzer	Concord	1893-1894
J. Hal Bobbitt	Raleigh	1894-1895
P. W. Vaughan	Durham	1895-1896
Augustus Bradley	Burlington	1896-1897
J. P. Stedman	Oxford	1897-1898
W. M. Yearby	Durham	1898-1899
J. B. Smith	Lexington	1899-1900
R. H. Jordan	Charlotte	1900-1901
E. W. O'Hanlon	Winston-Salem	1901-1902
H. T. Hicks	Raleigh	1902-1903
W. A. Leslie	Morganton	1903-1904
G. K. Grantham	Dunn	1904-1905
T. R. Hood	Smithfield	1905-1906
C. A. Raysor	Asheville	1906-1907

FIRST VICE-PRESIDENTS.

S. J. Hinsdale	Fayetteville	1880-1881
William Simpson	Raleigh	1881-1882
E. H. Meadows	New Bern	1882-1883
John H. Hill	Goldsboro	1883-1884
H. R. Horne	Fayetteville	1884-1885
A. W. Rowland	Wilson	1885-1886
F. W. Hancock	New Bern	1886-1887
T. D. Crawford	Oxford	1887-1888

J. D. Croom	Maxton	1888-1889
E. V. Zoeller	Tarboro	1889-1890
W. H. Wearn	Charlotte	1890-1891
H. R. Chears	Plymouth	1891-1892
N. D. Fetzer	Concord	1892-1893
J. Hal Bobbitt	Raleigh	1893-1894
P. W. Vaughan	Durham	1894-1895
Augustus Bradley	Burlington	1895-1896
J. P. Stedman	Oxford	1896-1897
W. M. Yearby	Durham	1897-1898
J. B. Smith	Lexington	1898-1899
R. H. Jordan	Charlotte	1899-1900
John H. Hardin	Wilmington	1900-1901
Henry T. Hicks	Raleigh	1901-1902
W. A. Leslie	Morganton	1902-1903
G. K. Grantham	Dunn	1903-1904
T. R. Hood	Smithfield	1904-1905
C. A. Raysor	Asheville	1905-1906
C. R. Thomas	Thomasville	1906-1907

SECOND VICE-PRESIDENTS.

William Simpson	Raleigh	1880-1881
E. H. Meadows	New Bern	1881-1882
V. O. Thompson	Winston	1882-1883
V. O. Thompson	Winston	1883-1884
A. W. Rowland	Wilson	1884-1885
F. W. Hancock	New Bern	1885-1886
B. E. Sedberry	Fayetteville	1886-1887
W. C. Carmichael	Asheville	1887-1888
L. Richardson	Selma	1888-1889
W. H. Wearn	Charlotte	1889-1890
H. R. Chears	Plymouth	1890-1891
N. D. Fetzer	Concord	1891-1892
J. Hal Bobbitt	Raleigh	1892-1893
P. W. Vaughan	Durham	1893-1894
Augustus Bradley	Raleigh	1894-1895
J. P. Stedman	Oxford	1895-1896
W. M. Yearby	Durham	1896-1897
J. B. Smith	Lexington	1897-1898
R. H. Jordan	Charlotte	1898-1899
E. W. O'Hanlon	Winston	1899-1900
H. T. Hicks	Raleigh	1900-1901
W. A. Leslie	Morganton	1901-1902
G. K. Grantham	Dunn	1902-1903
T. R. Hood	Smithfield	1903-1904
C. B. Miller	Goldsboro	1904-1905

C. R. Thomas	Thomasville	1905-1906
F. S. Duffy	New Bern	1906-1907

THIRD VICE-PRESIDENTS.

E. H. Meadows	New Bern	1880-1881
V. O. Thompson	Winston	1881-1882
T. C. Smith	Charlotte	1883-1884
T. C. Smith	Charlotte	1883-1884
F. W. Hancock	New Bern	1884-1885
John Tull	Morganton	1885-1886
J. D. Croom	Maxton	1886-1887
W. H. Wearn	Charlotte	1887-1888
H. C. Shannon	Goldsboro	1888-1889
P. W. Vaughan	Durham	1889-1890
N. D. Fetzer	Concord	1890-1891
B. E. Sedberry	Fayetteville	1891-1892
W. C. Thomas	Louisburg	1892-1893
Augustus Bradley	Raleigh	1893-1894
R. L. Dixon	Milton	1894-1895
H. M. McDonald	LaGrange	1895-1896
J. B. Smith	Lexington	1896-1897
J. I. Johnson	Raleigh	1897-1898
E. W. O'Hanlon	Winston	1898-1899
H. T. Hicks	Raleigh	1899-1900
W. A. Leslie	Morganton	1900-1901
G. K. Grantham	Dunn	1901-1902
T. R. Hood	Smithfield	1902-1903
C. B. Miller	Goldsboro	1903-1904
C. R. Thomas	Thomasville	1904-1905
F. S. Duffy	New Bern	1905-1906
J. E. Shell	Lenoir	1906-1907

SECRETARIES.

T. C. Smith	Charlotte	1880-1882
J. C. Munds	Wilmington	1882-1887
E. V. Zoeller	Tarboro	1887-1890
F. W. Hancock	Oxford	1890-1894
H. R. Horne	Fayetteville	1894-1899
P. W. Vaughan	Durham	1899-1907

TREASURERS.

John S. Pescud	Raleigh	1880-1882
A. S. Lee	Raleigh	1882-1891
A. J. Cook	Fayetteville	1901-1906
G. K. Grantham	Dunn	1906-1907

PLACES OF MEETING AND LOCAL SECRETARIES.

Raleigh, 1880 ..... Organization Meeting.
New Bern, 1881 ..... Business Committee.
Winston, 1882 ..... S. H. Smith.
Wilmington, 1883 ..... John D. Hardin.
Charlotte, 1884 ..... L. R. Wriston.
Greensboro, 1885 ..... R. G. Glenn.
Fayetteville, 1886 ..... B. E. Sedberry.
Asheville, 1887 ..... W. C. Carmichael.
Goldsboro, 1888 ..... H. C. Shannon.
Durham, 1889 ..... P. W. Vaughan.
Morehead City, 1890 ..... F. W. Hancock.
Morehead City, 1891 ..... R. J. Gooding.
Raleigh, 1892 ..... W. H. King.
Greensboro, 1893 ..... F. A. Bobbitt.
Asheville, 1894 ..... W. G. Smith.
Morehead City, 1895 ..... B. C. Jones.
Morehead City, 1896 ..... C. D. Bradham.
Raleigh, 1897 ..... J. H. Bobbitt.
Charlotte, 1898 ..... W. H. Wearn.
Durham, 1899 ..... P. C. Sneed.
Wilmington, 1900 ..... John H. Hardin.
Winston-Salem, 1901 ..... E. W. O'Hanlon.
Morehead City, 1902 ..... C. D. Bradham.
Morehead City, 1903 ..... F. S. Duffy.
Asheville, 1904 ..... W. C. Carmichael.
Morehead City, 1905 ..... F. S. Duffy.
Wrightsville Beach, 1906 ..... G. Y. Watson.
Lake Toxaway, 1907 ..... B. R. Davis.

MEMBERS OF THE A. P. ASSOCIATION

FOR THIS STATE.

C. D. Bradham.....New Bern.
John H. Hardin.....Wilmington.
Warren W. Horne.....Fayetteville.
Edward V. Howell.....Chapel Hill.
William A. Leslie.....Morganton.
Whitmel H. MacNair.....Tarboro.
Henry A. Pfafflin.....Asheville.
William Simpson.....Raleigh.
Whitford G. Smith.....Asheville.
P. W. Vaughan.....Durham.
E. Edward Walker.....Snow Hill.
Homer B. Ward.....Rowland.
Eugene T. Whitehead.....Scotland Neck.
Morrison P. Williams.....Charlotte.
Edward V. Zoeller.....Tarboro.

MEMBERS ELECTED

AT THE

TWENTY-EIGHTH ANNUAL MEETING.

Smith, Frank S.	Asheville.
Currie, Angus D., Jr.	Salisbury.
Andrews, Charles McD.	Chapel Hill.
Thomas, E. R.	Duke.
Kebler, Ralph E.	Morganton.
Marion, John E.	Elkin.
Moody, R. F.	Charlotte.
Atkins, D. J.	Durham.
McNeely, S. H.	Clinton.
McNeill, Geo. R.	Whiteville.
Secrest, A. McD.	Monroe.
Hunter, F. D.	Hendersonville.
Eldridge, C. T.	Greensboro.
Davis, I. L., Jr.	Morganton.

MEMBERS IN ATTENDANCE

AT THE

TWENTY-EIGHTH ANNUAL MEETING

ANDREWS, CHARLES McD.....Chapel Hill.
ATKINS, D. J.....Durham.
BRADHAM, C. D.....New Bern.
CARPENTER, F. L.....King's Mountain.
CURRIE, ANGUS D., JR.....Salisbury.
DAVIS, I. I., JR.....Morganton.
DETTER, E. E.....Dallas.
ELDRIDGE, C. T.....Greensboro.
GRANTHAM, GEO. K.....Dunn.
GRAY, P. C.....Statesville.
HAMILTON, ROBERT LEE.....Winston.
HANCOCK, F. W.....Oxford.
HART, JOHN ALBERT.....Hendersonville.
HICKS, H. T.....Raleigh.
HORNE, WARREN W., Ph. C.....Fayetteville.
HOWELL, E. V., A. B., Ph. G.....Rocky Mount.
HUNTER, F. D.....Hendersonville.
JUSTUS, WILLIAM HICKS.....Hendersonville.
KEBLER, RALPH E.....Morganton.
KING, C. E.....Durham.
MANSFIELD, A. L.....Fayetteville.
MARION, JOHN E.....Elkin.
McNAIR, WHIT. H., Ph. G.....Tarboro.
McNEELY, S. H.....Clinton.
McNEILL, GEORGE K.....Rowland.
McNEILL, GEO. R.....Whiteville.
MILLER, C. B., Ph. G.....Goldsboro.
MOODY, R. F.....Charlotte.
MORRISON, MATTHEW STUART.....Concord.
PRIOR, JACKSON L.....Raleigh.
RAYSOR, C. A.....Asheville.
ROSE, IRA W.....Benson.
SECREST, A. McD.....Monroe.
SHELL, JUNIUS E.....Lenoir.
SMITH, FRANK S.....Asheville.

SMITH, J. B. ..... Lexington.
THOMAS, CHARLES R. ..... Thomasville.
THOMAS, E. R. ..... Duke.
VAUGHAN, P. W., Ph. G. ..... Durham.
WATSON, GEO. Y. ..... Southport.
WEARN, W. H. ..... Charlotte.
ZOELLER, EDWARD V., Ph. G. ..... Tarboro.

MINUTES

OF THE

TWENTY-EIGHTH ANNUAL MEETING

FIRST SESSION.

LAKE TOXAWAY, N. C., June 13, 1907.

The Twenty-eighth Annual Meeting of the North Carolina Pharmaceutical Association was called to order by President C. A. Raysor, in the ballroom of the Toxaway Inn, at 2:30 p. m.

The session was opened with prayer by Mr. F. W. Hancock.

The President introduced Mr. J. L. Alexander, the genial proprietor of Toxaway Inn, to the Association, who spoke the words of welcome that made every member feel at home at once. He spoke of the beauties of Western North Carolina, the largeness of her mountains and how each vied with each other in an effort to grow taller than the others, and the big fish in the lake.

The response to the Address of Welcome was gracefully delivered in his own happy style by Vice-President Chas. R. Thomas, of Thomasville, as follows:

RESPONSE TO ADDRESS OF WELCOME.

Mr. Alexander:

The North Carolina Pharmaceutical Association is celebrating its twenty-eighth anniversary. It has an enviable record in the way of practical accomplishment for the good of pharmacy in this State. We can refer to the past with satisfaction and to the future with confidence, knowing that we represent definite ideas and principles. Our object is to unite the pharmacists and druggists of the State for mutual aid, encouragement and improvement; to encourage scientific research, develop pharmaceutical talent, to elevate the standard of

professional thought and ultimately restrict the practice of pharmacy and license only the skilled.

Do you realize that into the druggist's skill, knowledge and fidelity you submit your lives and health without suspicion? A greater honor cannot be paid than the trust which you put in us, and how sacred we guard your interest!

I have the honor as well as the pleasure on this occasion to reply to the gracious words of welcome to which we have just listened.

From the mighty Atlantic, fascinating in its beauty, as its ever moving waves sparkle in the sunlight of God's heaven; grand in its vastness as it stretches beyond the human vision to meet the earth; sublime in its power as the mighty storms lash into fury its broad bosom and its waves dart heavenward with their white crests which soon fall to mingle with the ever moving waters or break upon the sandy shores where our faults may be written upon the sands and every good deed be a wave to wash them out. We come today to celebrate another anniversary, in the "Land of the Sky," a summer-land,

> Where the sun doth shine,
> Where the weak grow strong,
> The strong grow great, our native land,
> The Western part of the Old North State,

where we are today, nearly four thousand feet higher than we were last year, and we trust that since our last meeting we are not higher in altitude alone, but that our profession has advanced higher and further in all its branches and that this meeting will be one intellectual Mt. Mitchell. Today we are the guests of a hospitable people who have entertained organizations of both State and national prominence. Your cordial welcome is felt by us now. Almost in view of the sepulchre which holds the remains of our State's greatest son, who on the battlefield made a daring and heroic record; as Governor, he stood without a peer, as a statesman he had no rival, and in Congressional halls his eloquence will always remain a shining star—the name of Zebulon B. Vance will remain immortal to every North Carolinian.

You have a resort of which you are justly proud, with a system of hotels admirably located, artistically built, elegantly furnished, and with everything surrounding for the comfort, convenience and pleasure of your visitors. No one can visit you without carrying away sweet memories—no larger or warmer hearted people will be found than we find in this section. With the inspiration one receives form the grandeur of the scenery, the lofty peaks smiling down from the blue curtained canopy of the skies upon beautiful streams stretching away like silvery ribbons across the velvet green carpet of Nature's Eden, will make an impression indellible upon our minds and will cause happy dreams to pass our vision as time rolls on.

In behalf of our Association I again thank you for the welcome you have given us—we feel that it is genuine—we accept your hospitality

and will avail every opportunity to enjoy being fanned by the cool breezes of this mountain land, drink your "mountain dew," which has been refined and purified in nature's distilleries amid the highest mountain peaks east of the Rockies, and sleep the sweet sleep which rests the mind and strengthens our hold on life, and when our work and pleasures are over, when we return to our respective homes, we will feel that it was good for us to have been here, and we will carry all through life many sweet recollections of this pleasant visit to Lake Toxaway.

The roll was called and a quorum being present the President declared the meeting ready for business.

On motion of Vice-President Thomas, the reading of the minutes of last year's meeting was dispensed with.

The President appointed the following Executive Committeemen to serve in the place of those who were absent: Messrs. J. B. Smith, H. T. Hicks, W. H. McNair and C. E. King.

Report of officers was next called for, and President Raysor called Vice-Presdent Thomas to occupy the chair during the reading of his address.

PRESIDENT'S ADDRESS.

Ladies and Gentlemen, Fellow Members of the North Carolina Pharmaceutical Association:

I greet you and bid you a hearty welcome to meet and discuss the issues that lie before us, in this beautiful transmountain section of our State.

One year has rolled by since we met by the seaside. I trust the year has been—as I believe—fuller of the joys and pleasures of life, than of sorrows and disappointments.

As I look around and see so many of my brothers of the mortar and pestle assembled here, representing nearly every section of the State, I feel very proud of you, and cannot fail to see in this gathering that we as druggists are getting our share of the great wave of prosperity that is sweeping over the whole country in general, and our own Southland in particular.

From all I can read and hear, the American druggists are in better financial shape than they have been for the past quarter of a century.

Admitting this statement to be true, let us look around and inquire into some of the means and measures that have brought about such a wonderful change in our affairs of life.

First of all I believe it to be, as much as any other one thing, the

splendid spirit of fraternalism so evident on every hand, the perfect willingness to put selfishness and greed aside, attending better than we have ever done before our local, State and National Association meetings, getting in the band wagon, and doing all we can by pulling together instead of separately, and sometimes pulling against each other.

In attending these meetings, and by sending delegates paid by our local and State associations to report back to us, we have caught an inspiration of our own strength, and have been introduced to our own ability.

If I may read between the lines the happenings all over our land, most surely we are approaching a better and brighter dawning day for Ethical Pharmacy. When I look over the field and observe the influences at work that are bringing about so great a forward movement, I take off my hat and bow low to our two great national allies, the N. A. R. D. and the American Pharmaceutical Association.

These two great bodies working along the same lines have done more to bring pharmacist and physician together—"a consummation devoutly to be wished"—than they have ever been heretofore. A better understanding exists, and better feelings maintain between these twin professions, each recognizing the rights of the other, and the value of harmonious work.

Since last we met the eighth revision of the U. S. P. and the third revision of the National Formulary, have come out, and been made legal by the law of the land. The revision of these two text-books has made a great many of the so-called chemicals which have been patented and trade-marked, official, under regular technical names.

Every one here knows what this means, when we can now buy in a regular way many of the much used chemicals that a few years ago sold for four to six times their price of today.

In addition, these two works having given us working formulæ for a great many other trade marked specialties, that so many of our physicians prescribe, the missionary work done and being done by our National organization, the pharmaceutical and medical press is gradually moulding sentiment in our favor, and it is up to the pharmacist to get busy, make as many of these preparations himself, call their local doctor's attention to the fact by sampling them at regular intervals, and watch results.

The preaching of the N. A. R. D. and the American Pharmaceutical Association has given rise to a little jealousy, each accusing the other of thunder stealing. Be this as it may, the subject is big enough and results great enough to give glory to all.

All this talk has awakened in many pharmacists a keen desire to test the plan for himself, and from reports of the press, this awakening is far reaching, and already the results obtained are most gratifying.

I have been trying this plan at my own store for the past four or

five years, and here are the results I obtained from looking over one hundred prescriptions on my files during the latter part of April each year of 1903, 1905 and 1907:

1903—60 Ethical, 40 patents and part patents.
1905—70 Ethical, 30 patents and part patents.
1907—72 Ethical, 28 patents and part patents.

This relation, I believe, will hold good with all the other stores of my town.

There is no doubt about it, gentlemen, the times are growing better and better to those of us who are not "asleep at the switch."

As "every cloud has a silver lining," so also most silver linings have their clouds.

THE DRUG TRUST.

The Court of Appeals at Indianapolis has recently rendered a very sweeping decision against what they called the drug trust. Every one of you have seen the flaming head lines in many of our dailies—"The Drug Trust Busted," "The People Vindicated," etc.

While we all admit of a combination of allied organizations for mutual protection, yet, in its operation, was as unlike what the general public look at as a trust. The combining of large interests to crush out the weak and helpless—that it appears to be a strange miscarriage of justice, that such an institution as this—an institution framed and operated to protect the weak and helpless against the strong, should have been among the first to come under the ban of the Federal Government in upholding the majesty of the Sherman Anti-Trust Law.

Of course this verdict carried with it the fall of the D. C. S. N. plan, and the cancelling of contracts of so many of the advocates of this plan is a bitter disappointment to us all, and will in some quarters cause a very serious setback to the general prosperous conditions now existing.

Doubtless many of us feel blue about the future, and possibly a few of us are now willing to withdraw our affiliation from the N. A. R. D., if there are such. I trust that this will be the last thing they do, for if the N. A. R. D., founded on the broad principles of living and allowing others to live, sticks to this principle, it will never die.

It is also true that in this dark hour of the N. A. R. D.'s existence, that if they ever needed strong loyal friends, that are willing to stand by them, as they have stood by us, for the past nine years, that are willing to go down in our pockets and return a portion of the extra profits that we have been enabled to make, by reason of the N. A. R. D.'s existence, it is now they need them most. I do earnestly ask this Association to send its full quota of strong men to the Chicago convention in September.

This will be the most important meeting the N. A. R. D. has had

since its inception, and will have need of the very best representation this State can send.

PURE FOOD AND DRUG LAW.

The past year has witnessed the birth of the National Pure Food and Drug Law. In its operation the retail druggist has nothing to lose and much to gain.

In State border towns and the District of Columbia, there have been some inconveniences, yet when these have been adjusted, it will work to the material benefit of the retail druggists.

I would suggest that every retailer who puts up a cough syrup, or a private formula of any kind, apply to the Department of Agriculture for a serial number, guaranteeing their products at once, before the numbers become too large and cumbersome. It costs nothing.

The North Carolina Legislature has also passed a Pure Food and Drug Law, operative after July first. This law will be of special interest to pharmacists of the State, since it has in view the appointment of a regular inspector of drugs, the appointee to be recommended by our Board of Pharmacy.

This, as you see, will give us a regular inspector, whose services will be paid for by the State, and as soon as this law gets to working in earnest, you will find registered clerks in *all* the drug stores in North Carolina.

I rejoice to announce the enactment of a most acceptable Anti-Narcotic law by our last Legislature. This law, as you all well know, is the result of the full and free discussion on this subject at our last two annual meetings, and it directly shows the benefits that will come to any measure where an interest is shown, and every one takes a hand in the discussion.

As the law now stands, it is very liberal in its application to our profession, leaving us to act, in the most troublesome cases, as our judgment dictates. This is as it should be, and I trust no member of the Association will so abuse his privilege as to make necessary future amendments or a possible repeal. This Association, I feel, is under lasting obligations to the legislative committee entrusted with this work, and especially so to its chairman, for his unceasing work before the Legislature in getting this most important bill passed. I, for one, sir, wish to thank you personally.

I hope this Convention will not adjourn without passing resolutions endorsing and pledging its continued support to the N. A. R. D. in its varied lines of work for the benefit of the retail drug trade. Also the Mann Bill with the Courrier amendment in regard to issuing of patents. Also resolutions requesting proprietors of over-priced patents to adopt the two, four and eight schedule as being just to both sides.

I wish to impress on all the members of this Convention the importance of attending every session of its meetings. This is not a one

man's convention, nor any set of men, but a convention of all of you, a North Carolina Druggists' Convention. Any one of you has as much interest in its deliberations as I, or any one else, and it is not only your privilege but your duty to take part in its doings. Now let us all do our full duty in attending all the sessions, giving our own, as well as listening to views of others, on the various subjects for discussion. If we do, we will make the 28th Annual Convention one of the very best ever held.

And now in conclusion, I wish to thank one and all for electing me your President for the past year. I esteem it a great honor, and while your Secretary, Treasurer and Executive Committee have done most of the work, yet the portion that has fallen to me I have done to the very best of my ability, and I hope it has been satisfactory. It has been done with a sincere desire to the upbuilding of pharmacy, and the uplifting of my fellowmen in the profession.

Brethren, I thank you.

Upon motion, the President's Address was referred to the following committee: Messrs. J. E. Shell, F. L. Carpenter and C. E. King.

The Secretary's report was then read:

SECRETARY'S REPORT.

To the President and Members of the North Carolina Pharmaceutical Association:

The work of the office of the Secretary during the closing year has been pleasant and somewhat strenuous.

The issue of the Annual Proceedings was delayed somewhat, due largely to the Secretary's efforts to secure a large number of advertisers. The field was very thoroughly canvassed and advertisements amounting to $190.00 were secured. The entire amount has been collected and paid to the Treasurer, whose receipt is hereto attached.

Copies of the Proceedings were mailed to each member, the advertisers, Secretaries of other Associations, and the Pharmaceutical Journals of the country.

In exchange of courtesies your Secretary received proceedings of other State Associations, also those of the N. W. D. A., and the Proprietary Association of America, and several Pharmaceutical Journals.

The membership of our Association is 238, a gain of 28 over the past year.

The official announcements of this meeting were sent to all members and many who were not.

The best railroad rates that could be secured were the regular season tickets and the Secretary advised officially that these tickets be bought.

The expenses of this office for the past year have been as follows:

Postage	$ 17 00
350 Copies of the Proceedings	176 95
400 Announcements	6.50
750 Envelopes	3.00
Secretary's Salary	75.00
	$278 45

Respectfully submitted,

P. W. VAUGHAN, *Secretary.*

Upon motion duly adopted, the report was referred to the following Auditing Committee: W. H. Justus, C. B. Miller and I. W. Rose.

THE PRESIDENT. We will now have the report of Treasurer Grantham.

TREASURER'S REPORT.

1906.	RECEIPTS.	
July 9.	By cash, Cook	$524 46
1907.		
May 28.	By ads, Secretary	190 00
June 12.	By dues	152 00
		$866 46

1906.	DISBURSEMENTS.		
July 9.	To Raysor, expenses delegate	$ 43 50	
11.	To G. K. Grantham, expenses delegate	28 50	
11.	To G. K. Grantham, bond treasurer	5 00	
28.	To Stenographer	16 50	
Aug. 6.	To Printing Narcotic Law	5 00	
27.	To Board Pharmacy, H.	150 00	
Sept. 13.	To N. A. R. D. dues	54 00	
22.	To Zoeller, A. P. A. expenses	28 20	
Oct. 18.	To T. R. Hood, delegate	14 45	
26.	To Freight and stamps	1 60	
1907.			
Jan. 21.	To The Seeman Printery	150 00	
May 22.	To Stamps and stationery	5 60	
28.	To The Seeman Printery, balance	26 95	
28	To Stamps and cards	1 00	
		$530 30	
	By balance on hand	336 16	
			$866 46

G. K. GRANTHAM, *Treasurer.*

After the reading of the report same was referred to the Auditing Committee.

Report of the Secretary and Treasurer of the Board of Pharmacy was read and referred to the Auditing Committee.

The President announced that he had received a package of cigars from Cliff Weil Cigar Co., of Richmond, and from Otto Eisenlohr & Bros., of Philadelphia, and that they were for the enjoyment of the members during the convention. They were heartily accepted and the Secretary was requested to convey the thanks of the Association to these firms for their liberality and thoughtfulness.

The following telegrams were received and the Secretary was instructed to respond to same:

TELEGRAMS AND LETTERS.

ST. LOUIS, MO., June 13, 1907.

P. W. Vaughan, Secretary N. C. Pharmaceutical Association, Lake Toxaway, N. C.:

The Meyer Bros. Druggist extends hearty congratulations and wish you a successful meeting. We expect a large delegation at New York in September. HENRY M. WHELPLEY, *Editor.*

PERTLE SPRINGS, MO., June 13, 1907.

W. H. Justus, Local Secretary N. C. Pharmacists, Lake Toxaway, N. C.:

Missouri pharmacists extend hearty greetings and wish you a pleasant and successful convention. HENRY M. WHELPLEY, *Permanent Secretary.*

ATLANTIC BEACH, FLA., June 12, 1907.

P. W. Vaughan, Secretary, Lake Toxaway, N. C.:

Florida's best wishes to North Carolina brothers. Will meet them at New York and Chicago in September. D. W. RAMSEUR.

PHILADELPHIA, PA., June 11, 1907.

Mr. C. A. Raysor, Asheville:

Expressed today to Asheville five hundred Cincoes for pharmaceutical meeting. OTTO EISENLOHR & BROS.

RICHMOND, VA., June 6, 1907.

Mr. C. A. Raysor, Asheville, N. C.:

DEAR SIR:—Replying to your recent favor, beg to advise we take pleasure in shipping you, care Toxaway Inn, Toxaway, N. C., by express prepaid, 250 El Principe De Gales Rothchild Extra Fina. We have shipped these goods in your name as President N. C. Pharmaceutical Association. It would be advisable for you to advise the Toxaway Inn people to look out for this package for you, as we notice your meeting is not until the 12th of June. We hope you will all enjoy smoking these good cigars with our compliments.

Yours very truly,

CLIFF WEIL CIGAR CO.,

By Cliff Weil, *President.*

May 29, 1907.

NEW YORK, June 1, 1907.

Mr. P. W. Vaughan, Secretary North Carolina Pharmaceutical Association, Durham, N. C.:

DEAR SIR:—I beg to inform you that President Carey has appointed the following delegates to represent this Association at the next meeting of the North Carolina Pharmaceutical Association, which I understand will be held at Lake Toxaway, N. C., on June 13th and 14th:

R. L. Justice, Justice Drug Co., Greensboro, N. C.

D. C. Crutchfield, Vaughn-Crutchfield Co., Winston-Salem, N. C.

Dr. T. C. Smith, Asheville, N. C.

I have sent credentials to our delegates, and with best wishes for a large and successful meeting, I remain,

Yours very truly,

J. E. TOMS, *Secretary.*

SOUTH BEND, IND., June 8, 1907.

Mr. P. W. Vaughan, Durham, N. C., Secretary North Carolina Pharmaceutical Association:

DEAR SIR:—I desire to extend through your good self, the hearty greetings of the American Pharmaceutical Association, to the North Carolina Pharmaceutical Association, and to express the hope that your convention may prove profitable, successful and enjoyable. Also to assure you, that in all things which stand for the betterment of conditions pertaining to pharmacy, your Association can always count on the aid of the A. Ph. A.

Wishing you continued prosperity, I am, Yours sincerely,

LEO ELIEL,

President American Pharmaceutical Association.

The Executive Committee made a partial report and presented the following names for membership: Frank

S. Smith, Asheville; Angus D. Currie, Jr., Salisbury; Charles McD. Andrews, Chapel Hill; E. R. Thomas, Duke; Ralph E. Kibler, Morganton; John E. Marion, Elkin; R. F. Moody, Charlotte; D. J. Atkins, Durham; S. H. McNeely, Clinton; Geo. R. McNeill, Whiteville; A. McD. Secrest, Monroe; F. D. Hunter, Hendersonville; C. T. Eldridge, Greensboro; I. I. Davis, Jr., Morganton.

Also the following as associate members: J. P. Sisemore, T. W. Purcell, H. F. Coble and W. A. Underwood.

The President called for the report of the Committee on Papers and Queries.

The chairman of the committee asked that the report be postponed to a future meeting.

Committee on Trade Interest made a verbal report.

The Committee on Legislation made the following report:

REPORT OF LEGISLATIVE COMMITTEE.

The Legislature of 1907 has met and adjourned. The chairman of your committee attended most all of the sessions of that body. The entire committee was called together on two occasions, once at Raleigh and once at Goldsboro, that they might consult together, in regard to such legislation as was then pending, or that might come up before the Legislature.

Your committee reports that the hardest fight they had and perhaps that any other committee has ever had, was the defeating of the "Douglass Bill," which was introduced by Representative W. C. Douglass, of the county of Wake. This bill prevented the selling at the soda fountain of any drinks containing caffeine, any narcotic, or any of the coal tar derivatives. When he introduced this bill, it was referred to the Committee on Propositions and Grievances, of which he was chairman. The bill was acted upon favorably by the committee, without giving us a chance to appear before the committee. When it was reported to the House for action the chairman of your committee had the attorney of the Board of Pharmacy, Gen. B. S. Royster, who was a member of the House from Granville County, to have the bill re-referred to the committee and to have a date set for the discussion thereof, so that your committee and those interested therein might be heard upon the subject. The subject was under consideration by the committee for two days or more, it being at this time that all the

members of the committee were called by the chairman to Raleigh, that some definite action might be taken as to what course should be pursued in regard to defeating said bill. Your chairman appeared at every session of the committee, discussing and opposing the passage of the bill, but agreeing that if the committee would make an amendment by striking out the word *caffeine* he would not oppose it, nor would the druggists of the State, whom he represented.

The committee, by a vote of 7 to 6, reported the bill unfavorably, but Mr. Douglass, representing the minority, made a minority report, asking the Legislature to pass the bill as he had introduced it. After a hard fought battle, Douglass and his friends using every effort in their power to carry it, we succeeded in defeating its passage.

Your committee reports further that the Anti-Narcotic Bill, which was unanimously adopted at the last meeting of the Association, was enacted into law. In this bill licensed pharmacists have the right to sell to habitués personally known to them as such. If we understand the bill correctly the general dealer is not permitted to continue the sale of laudanum, nor are the druggists of the State, except upon prescriptions.

The Board of Pharmacy, through its Secretary and Inspector, having been frequently and constantly consulted by the general dealer as to what drugs and medicines could be sold by them in compliance with the State Pharmacy Law (the said law stating that they could sell patent and proprietary medicines and non-poisonous domestic remedies), and being requested to fix and publish such a list for the use of said dealers, consulted their attorney as to whether they had authority under the law to fix such a list and he gave it as his opinion that they did not. So the Legislature was asked to amend the present law and give the board authority or power to define and designate what are non-poisonous remedies. This was done, and the board will soon fix and publish a list of such household remedies as the general dealer can handle under the law.

Your committee found when they reached Raleigh that the State Board of Agriculture had agreed upon the introduction of a Pure Food and Drug Bill, similar to the one passed by the national government, and had gotten Senator Buxton, of Forsyth county, to draw up such a bill and introduce it for them. Your chairman, with the attorney of the Board of Pharmacy, examined the bill, as drafted by Senator Buxton, especially the drug portion of it, and had the following amendments made and passed: First, exempting from the label requirements all prescriptions of regularly licensed physicians, dentists and veterinary surgeons. U. S. P. and N. F. preparations. Second, in the appointment of a drug inspector under the provisions of the act, the Board of Agriculture has to confer with the Board of Pharmacy. Third, the Board of Pharmacy from time to time has to fix and publish standards of limits of variability permissible in any article of drugs

We were successful in having passed every bill that we thought would be helpful to the progress of pharmacy in the State, and in defeating every one that we thought would be hurtful to the best interest of our profession. What we have accomplished in the way of legislation, and what we may accomplish in the future along this line, shows what can be done by co-operation and thorough organization.

When we look back for twenty-five years and see what a wonderful progress we have made along all lines, it is surprising indeed to us that every druggist in the State is not a member of the North Carolina Pharmaceutical Association, through whom all this work has been accomplished. We truly hope that every one who is not now a member of our Association will before very long come and join us, and, putting their shoulders to the wheel with us, help to make greater advancements along all lines than has ever been made before. We were fortunate in having in the Legislature Gen. B. S. Royster, from Granville county, the Attorney of the Board of Pharmacy, who rendered us great and valuable services. We were under special obligation also to Mr. Henry T. Hicks, of Raleigh, who assisted us very greatly.

The Anti-narcotic Law and the Pure Food and Drug Bill have been printed in pamphlet form. Copies of the same are ready for distribution, and have already been mailed to every registered druggist in the State.

Respectfully submitted,

F. W. Hancock,
For the Committee.

The thanks of the Association were tendered the Legislative Committee for the excellent report they made and the efficient work done during the last session of the Legislature.

Motion was made by Mr. Hancock and adopted, that the thanks of the Association be tendered others who assisted in the passage of laws that were helpful and beneficial to all citizens of North Carolina as well as the pharmacists.

Committee on Adulterations made no report.

Motion was made by Mr. C. E. King for adjournment until 8:30 this evening.

Adopted.

The President. The meeting now stands adjourned till 8:30 this evening.

SECOND SESSION.

Meeting was called to order by President Raysor, at 9:00 p. m.

The minutes of the morning session were read and, on motion, approved.

The President called for further report of Delegates.

Mr. G. Y. Watson, Chairman of the N. A. R. D. Committee, made his report, which appears below:

REPORT OF DELEGATES TO N. A. R. D.

Mr. President and Members of the North Carolina Pharmaceutical Association:

It was the pleasure of all the members of your delegation to attend the N. A. R. D. held in Atlanta, Ga., October 1 to 5, 1906. Besides the delegates from this Association, there were present about twelve or fifteen druggists from different sections of this State, representing local associations of North Carolina.

There were no changes made in the dues. The plans outlined heretofore were endorsed, as to serial numbering and direct-contract plan—two, four and eight price goods. It is not so much what happened at that meeting that concerns us, but the injunction against the N. A. R. D. out in Indiana since the meeting now confronts not only the N. A. R. D., but the North Carolina Pharmaceutical Association.

Your committee believes, after careful thought over the matter, that the Association and its members will find a plan and a way yet that will be safe and beneficial to the druggists; therefore, we recommend a continued affiliation with the N. A. R. D.

Respectfully submitted,

GEO. Y. WATSON,
For Delegation.

The Committee on President's Address reported as follows:

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

The Committee on President C. A. Raysor's address wish to report. That having fully read and examined the interesting, instructive and suggestive report of last year's work and address combined, that we accept and hereby express our appreciation and thanks for his suggestions and time devoted to the Association as President, and print in the proceedings this most excellent address. And, further-

more, that we wish to emphasize the importance of several points suggested for consideration, to-wit: more thorough and complete organization in our State and a better attendance thereby, especially the younger members.

Better concerted action and fellowship between pharmacist and physician in regard to Pharmacopœia and National Formulary preparations, and most especially our hearty and continuous affiliation and support to the American Pharmaceutical Association and N. A. R. D. just at this time. Respectfully submitted,

J. E. Shell, Chmn.,
F. L. Carpenter,
C. E. King,
Committee.

The Auditing Committee made their report, which appears below:

REPORT OF AUDITING COMMITTEE.

We, the undersigned Auditing Committee, have examined the account of the Secretary and Treasurer of the Board of Pharmacy and find same correct.

We recommend that the Treasurer of the N. C. P. A. reimburse the Board of Pharmacy one hundred and three dollars ($103.00), covering the expenses incurred by the Board of Pharmacy in securing proper legislation and defeating unfavorable legislation.

W. H. Justus, Chmn.,
Chas. B. Miller.

We, the undersigned Auditing Committee, have carefully examined the accounts of the Secretary and find same correct.

W. H. Justus, Chmn.,
Chas. B. Miller,
Ira W. Rose.

We, the undersigned Auditing Committee, have carefully checked the above account of the Treasurer of the N. C. P. A., and find same correct.

W. H. Justus, Chmn.,
Chas. B. Miller,
Ira W. Rose,
Committee.

The Parcels Post Bill was taken up and precipitated a general discussion. Messrs. Miller, Wearn, Hancock, Grantham and others entered into the discussion and did not hesitate to express themselves in a very vigorous manner as being opposed to this proposed measure.

Mr. Wearn made a motion that this Association go on record as being opposed to the Parcels Post Bill now pending in Congress, and that the North Carolina representatives and senators be notified of the fact and that they be urged to use their influence against it.

Unanimously adopted.

The following communication from the President of the Maryland Pharmaceutical Association was read.

BALTIMORE, MD., May 23, 1907.

Mr. P. W. Vaughan:

DEAR SIR:—As President of the Maryland Pharmaceutical Association, have appointed two delegates who will be present at the meeting of the N. C. Pharmaceutical Association, at Lake Toxaway, to represent our Association.

Delegates, Mr. J. Emory Bond, Mr. Geo. G. Muth.

Respectfully yours,

J. EDWIN HENGST.

Mr. Muth most graciously responded. He brought fraternal greetings from the Maryland Association, and said he was glad to be with the boys of the Old North State in annual convention again.

Mr. Bond, of Baltimore, also made a very happy little speech, in which he said he was very much gratified at being present at the meeting and that he knew he would enjoy it from start to finish.

There was a general discussion as to the benefit that the pharmacists of North Carolina had derived from the N. A. R. D. by reason of our affiliation with the present body.

Mr. King spoke for the Durham branch and expressed himself as greatly pleased with the work it had done for the druggists of Durham. He said they joined at the first opportunity and had been loyal members ever since.

Mr. Hicks spoke for the Raleigh branch and said that

the N. A. R. D. had been of much benefit to the pharmacists of that city.

Mr. Wearn represented Charlotte and said they had run out a price cutter there and there was no cutting now.

Mr. Bradham, of Pepsi Cola fame, told of the benefits received by the Craven county organization. That before organization patent medicines were sold at cut prices, but since they were organized full prices have been restored and there has been no cutting since. He thought that the N. A. R. D. had been the means of a thousand dollars a year more in profits to him since organization. He was delighted at this wonderful improvement.

Mr. W. W. Horne related his experience as to what the N. A. R. D. had done in Fayetteville. That it had been the means of their having a Sunday arrangement by which only one store was open on Sunday and all others were closed.

Mr. G. Y. Watson spoke of the conditions prevailing in Southport before the advent of the N. A. R. D. He said previous to that time there was general cutting, but since full prices prevailed.

Mr. Grantham, representing the Harnett and Johnson county organization, spoke along the same lines of the previous speakers and said the N. A. R. D. had been of great benefit to the members of his organization.

Mr. Frank S. Smith said that full prices had prevailed in Asheville since organization.

The President called Vice-President Thomas to the chair, and he spoke in glowing terms of the good that had been accomplished by the influence of the N. A. R. D.

Mr. Hamilton, of the Granville County Association, spoke most favorably on the subject, and heartily en-

dorsed everything that had been said favorable to the organization.

Mr. Miller offered the resolutions which follow, and they were unanimously carried:

RESOLUTIONS.

WHEREAS, The National Association of Retail Druggists has for nine years been working intelligently and earnestly for the upbuilding of our chosen calling, doing work which local and State druggists' associations *cannot* do and which only a well conducted national organization *can* do, and

WHEREAS, We have implicit confidence in the unselfish devotion of the leaders of the N. A. R. D. to our welfare and to the welfare of the entire retail drug trade of the country, and

WHEREAS, Recent events have proved that now more than at any time in the past it is necessary that druggists stand together resolutely for the protection and advancement of their common interests, therefore by the North Carolina Pharmaceutical Association be it

Resolved, That our loyalty to the N. A. R. D. is hereby enthusiastically reaffirmed.

Resolved, That our unwavering confidence in the executive officers of that Association is hereby declared, together with our belief that some way will be found by these officers to overcome the difficulties by which they are at present surrounded, and that as an outcome the National Association will prove itself to be stronger than ever as the champion of the interests of the retail drug trade.

Resolved, That the President is instructed to appoint our full quota of delegates to the annual convention of the N. A. R. D. to be held in Chicago, the week of September 16, 1907.

Messrs. Bradham, Hancock and Grantham were appointed a Committee on Time and Place of Next Meeting.

Motion to adjourn till 9:00 a. m. tomorrow morning was adopted.

THIRD SESSION.

Meeting called to order by President Raysor at 10:30 a. m.

The minutes of the previous session were read by the Secretary and, upon motion, were adopted as read.

The Secretary read the following communications from the N. A. R. D.:

Mr. C. A. Raysor, President North Carolina State Pharmaceutical Association, Asheville, N. C.:

Dear Sir:—For several years we have written a letter to the President of your Association in the hope that it would be read at your annual meeting. Unavoidably these letters have usually been long; but we have tried to make them an inspiration to better and still better association work. We are anxious to have you understand the sincerity of our interest in the welfare of the druggists of North Carolina and our wish to contribute as far as we are able to the profitableness of their business. Few druggists have money enough to be philanthropists. For this reason the dollars-and-cents side of our business can never be lost sight of. The specific purpose of enabling druggists to get more out of their business—more money and more satisfaction—is what caused the N. A. R. D. to be formed.

The question we would like to have you consider is this: How can the National Association be of greater service to the druggists of your State? There are several things these druggists urgently need. Among these are the following:

First, you need profitable *selling* prices for whatever you handle. The National Association has endeavored to secure this by inducing proprietors to adopt the Direct Contract-Serial Numbering Plan or some other equally good plan that would prevent proprietaries from being exploited by the cut-rate stores, the department stores and the mail order houses *for advertising purposes.*

By a recent decision in the United States Circuit Court at Indianapolis, most of the proprietors who have been using the Direct Contract-Serial Numbering Plan were enjoined from continuing its use unless they secured new contracts with wholesalers and retailers. The D. C. S. N. Plan as such was not declared illegal, but its use, as an outcome of, and in conjunction with, what the government alleged to be a conspiracy to restrict trade, was enjoined. It is undeniably true that most of the proprietors who have been using this plan graduated out of the old tripartite plan (which has been declared illegal), and when the tripartite plan went down, all other plans, for the time being, at least, went with it.

However, these things without doubt remain: The courts have decided that the individual manufacturer has the right to protect by lawful means the selling price of his proprietaries, and the individual druggist has an undeniable right to refuse to handle goods that do not provide for him a reasonable profit. How to protect the retailer in his reasonable desire to sell proprietaries at a profit is the problem he no doubt will solve when he realizes that his only hope of success depends upon his ability to reach a solution.

If the selling of advertised proprietaries by druggists cannot be made profitable, then the pushing of preparations which druggists themselves, either individually or through their National Association, manufacture and control may well receive the attention of the retail drug trade as a means to their permanent welfare. To the consideration of this subject the N. A. R. D. is, at this time, giving most painstaking thought.

The Indianapolis decision referred to has nothing whatever to do with the commerce *within the states*, so that the druggists are and have been, maintaining living prices on the goods they sell—actuated thereto by a desire to advance their own interests and to give their fellow druggists and the public a square deal—will not be interfered with by the federal government in the carrying out of this arrangement, any statements made by interested parties—in the drug journals or elsewhere—to the contrary notwithstanding. It will be the persistent aim of the National Association, as it always has been in the past, to stimulate this live and let live policy.

Second, your druggists need to *buy* goods at the right prices. Two, four, and eight dollars a dozen is the most you can afford to pay for 25c., 50c., and $1.00 goods. We have not only induced a number of proprietors to lower their prices to these figures or less, but for nine years we have prevented any manufacturer putting a new preparation on the market at a higher price. This has saved hundreds of thousands of dollars to the retail drug trade since the N. A. R. D. has been in existence.

Then, too, the advantages of co-operative manufacuring and buying —especially the latter—are now being earnestly considered by the executive officers of the National Association. In the outcome of this discussion we feel sure your members are greatly interested, because of the marked advantages to themselves which such a policy, if adopted, would bestow.

Third, your druggists need to be protected against adverse legislation, national and state, and to have laws passed that will effectually safeguard their interests. It is needless to assert that this is a hard task: you know it is. But we have performed it far more successfully in most cases than was to have been expected, both in congress and in the various legislatures. Wherever the influence of the National Association has been invoked we have taken off our coats

and done our best. Our efficiency as a fighting body is becoming recognized more and more as one victory after another is being scored.

Fourth, the druggists of your State need to be protected against the necessity of placing hundreds of dollars worth of pharmaceutical proprietaries on their shelves when these druggists can make as good preparations, at a small fraction of the cost, while having little or nothing invested. The U. S. P. and N. F. propaganda which the National Association is pushing will bring physicians to realize that the Pharmacopœia and the National Formulary provide them with *practically* everything they need for the treatment of disease.

The hundreds of pharmaceutical proprietaries the physicians of the country have grown accustomed to prescribe do not equip them for combating disease any better than they are equipped by using the preparations of the Pharmacopœia and National Formulary. In the case of the latter they *know* what they are giving, whereas in the other case the prescribing is done by the manufacturer, some of whom know absolutely nothing about either medicine or pharmacy. On the other hand, druggists by making and dispensing the U. S. P. and N. F. preparations not only make more money, but give the physicians better help, while saving their patients needless expense.

This reform in prescription work is being brought about in such a sensible, practical way we wonder that it was not thought of long ago. It is a satisfaction to know that the American Medical Association is working hand in glove with us. As a help the N. A. R. D. is now supplying labels to druggists who wish to sample their physicians, and these labels can be bought in small quantities at a trivial cost. Copies of the National Formulary, and other helpful text-books, can also be bought of the National Association at greatly reduced prices.

Pharmaceutical houses encouraging physicians to dispense, instead of writing prescriptions, and to buy from manufacturers direct, instead of patronizing their local druggists, is another crying abuse the N. A. R. D. is endeavoring to correct. In this undertaking we earnestly request the aid of your State Association. The retail druggists of the country have made these pharmaceutical manufacturers—many of them—rich and powerful and their present attitude toward us, as manifested by their actions, is ingratitude of the most shameless character.

To continue naming the benefits which the National Association has bestowed, and is bestowing, upon the drug trade would be taking up your time unnecessarily, because your druggists who are wide awake *know* that the N. A. R. D. is doing everything in its power to make the retail drug business pay better. Furthermore, these druggists know that in investing money in the N. A. R. D. they are making the wisest outlay of funds that has ever been made by them.

What is needed, *all* that is needed, to make the Association still more valuable is the continued support of the druggists of the various States, so that it can be shown to doubting manufacturers, proprietors and jobbers, that the organization really represents the combined influence of the *entire* retail drug trade.

The necessity of maintaining a National Association whose sole business it is to safeguard and advance the interests of our people is, to those of our members who have studied the subject, self-evident. Your older members know that we have tried for years in the various States to better our condition, but we were able to accomplish extremely little of real value; we learned by hard experience that our only salvation from business difficulties is in maintaining some strong *national* tribunal that will look after our interests.

Our experience in the litigation through which we have just passed only emphasizes the necessity of our standing shoulder to shoulder in defense of one another's rights and the advancement of one another's welfare. Every line of business is now maintaining its local, its State, and its national organizations, because experience has proved that the existence of these associations is imperatively necessary. Surely no line of business needs protection more than ours. This being true, how foolish it would be for druggists to allow the National Association to slacken its pace or to fall into disuse through lack of support. What we must do, if our best interests are to be served, is to *strengthen* the N. A. R. D. by giving liberally our financial, as well as moral support—by expecting great things of it—by equipping it to accomplish great deeds.

The National Association has not accomplished more in the past because it has nearly always had an empty treasury. Some of the labor organizations have millions of dollars in their treasury, and they have gone from one stage of prosperity to another in spite of the powerful forces arrayed against them, because they were equipped for aggressive action, either for offense or defense. Shall we not learn a lesson from this experience? The State Association's dues to the N. A. R. D. are only 25 cents per capita. We shall be glad to hear from you regarding your dues whenever it is most convenient.

Another important matter, Mr. President, don't forget to send delegates to the convention to be held in Chicago, September 16. It will be one of the most important meetings of retail druggists that has ever been held. The N. A. R. D. is in every respect a *national* association. It is dominated by no section of the country; by no one class of druggists. Every druggist is the equal of every other druggist in the eyes of the N. A. R. D. Send us some good men to help us solve the knotty problems of how to make the drug business pay better; what further to do on behalf of the druggists of North Carolina and of the remainder of the country.

Presenting the fraternal greetings of the National Executive Com-

mittee, and expressing the hope that your convention this year may be one of the best, if not the very best, you have ever held, I am,

Sincerely yours,

T. V. WOOTEN, *Secretary.*

To the Executive Committee of the National Association of Retail Druggists:

The North Carolina Pharmaceutical Association, of which I am Secretary, directs me to answer in the following manner the questions you have asked below:

1. Is, or is not, your Association in favor of the N. A. R. D. going into the manufacturing, at this time, of such drugs and medicines (including proprietaries) as can be manufactured and sold at a marked saving to the dues-paid members of the N. A. R. D.?

Answer: No, not yet.

2. Is, or is not, your Association in favor of the N. A. R. D. going into the buying and selling of such drugs, medicines and drug store merchandise as can be handled with greatest profit to the dues-paid members of the N. A. R. D.?

Answer: No.

3. If your organization favors the taking up of either propositions 1 or 2, or both of them, in what manner do you believe the necessary funds should be raised?

Answer: Does not favor these propositions.

4. If propositions 1 or 2, or both of them, are favored by your Association, do you believe the National Association itself should take up the work or is it your opinion this should be done by a *subsidiary body*, formed by the N. A. R. D. and controlled by it?

Answer: Do not favor the propositions.

5. Is there any sentiment among your members favorable to the formation of a buying club for *your own local purposes;* if so, please state how strong this sentiment is? Have you such a club now in existence; if so, is it successful?

Answer: No.

6. In the event your organization is favorable to propositions 1 or 2, or both of them, how many of your members (approximately) would probably take stock in a company organized by the N. A. R. D. for one or both of the purposes named?

Answer: It is not favorable.

7. Can you not give us some *additional information* regarding the attitude of your members toward the questions herein discussed, that will be helpful to the National Executive Committee?

Answer: No.

Respectfully submitted,

P. W. VAUGHAN, *Secretary.*

After discussion the Secretary was instructed to answer the questions, "No, not at present."

The Committee on Papers and Queries made their report and presented several papers for consideration and discussion.

A paper by Mr. Blauvelt on "The Pharmacopœia and National Formulary" was read by Mr. Wearn, and was discussed by Messrs. Wearn, Miller, Smith, Grantham, Hancock, Bradham and others.

The following were read by title:

"Coal Tar Products," by David S. Chapman.

"Alcohol," by A. M. D. Secrest.

"Drugs and Their Derivatives Included in the Pure Food and Drug Law and Some Practical Tests for Their Identification," by R. E. Kibler.

"Alkaloidal Tests," by D. J. Atkins.

"Pharmacy—A Trade or a Profession," by Gilbert Crabtree.

"How to Get the Physician to Use U. S. P. and N. F. Preparations in His Prescriptions Instead of the Proprietary Preparations Now Used," by G. Y. Watson.

"How Can We Secure a Greater Attendance at the Meetings of the North Carolina Pharmaceutical Association?" by C. R. Thomas.

Mr. Purcell, of Purcell, Ladd & Co., offered a prize, consisting of a copy of the National Formulary and also one of the U. S. Pharmacopœia, for the best collection of preparations made from these two standard works.

This offer was accepted by the Association and thanks were extended Mr. Purcell for his interest manifested and generous offer.

The Board of Trustees of the U. S. Pharmacopœia placed at the disposal of the Association a copy of the Pharmacopœia, to be awarded as a prize for the best

paper presented at the 1907 meeting on "How to Increase the Interest of the Medical Profession in the U. S. Pharmacopœia, which was heartily accepted by the Association.

Mr. Howell asked that if any member had any old works on pharmacy or its allied branches, he would be glad to secure them.

Mr. G. K. Grantham offered a prize of a copy of the U. S. P. for a paper, the subject to be, "How Best to Conduct a Retail Drug Store in North Carolina?"

Accepted.

Motion by Mr. Thomas that the present Committee on Papers and Queries be appointed to award all prizes at this session, was adopted.

Committee on Time and Place of Meeting recommended Morehead City for the next meeting of the Association, and suggested a three days session instead of two as heretofore. They also recommended July 8th, 9th and 10th, 1908.

The report of the committee was unanimously adopted.

It was suggested by Mr. Hancock and concurred in by the entire Association that a special effort be made to secure an attendance of one hundred at the next annual meeting and that the writing of papers be encouraged.

Motion by Mr. Hicks that the financial part of the report be referred to the Auditing Committee, was adopted.

Mr. Zoeller, Chairman of the A. P. A. Committee, made a verbal report. He spoke of the great work that had been done and is being done by that organization, and urged the members of the Association to join.

There was considerable discussion by the different members as to prerequisite for registration by the Board of Pharmacy, and on motion, the President appointed a committee, consisting of H. T. Hicks, W. D.

Hood, and W. M. Yearby, to report on this subject at the next annual meeting.

The Secretary was requested to notify Mr. R. P. Foster, General Manager of the Norfolk and Southern Railroad, of the next meeting at Morehead City, so that other meetings may not conflict with it.

The President said that the election of officers was the next order of business. This matter was taken up and resulted at follows:

President—Charles R. Thomas, Thomasville.

First Vice-President—J. E. Shell, Lenoir.

Second Vice-President—G. Y. Watson, Southport.

Third Vice-President—W. H. Justus, Hendersonville.

Treasurer—G. K. Grantham, Dunn.

Secretary—P. W. Vaughan, Durham.

Executive Committee—T. R. Hood, Smithfield; F. S. Smith, Asheville; H. T. Hicks, Raleigh; C. E. King, Durham; P. W. Vaughan, *ex-officio.*

Local Secretary—D. R. Davis, New Bern.

Member of Board of Pharmacy—C. D. Bradham.

Motion was made by Mr. Miller and unanimously carried that the thanks of the Association be extended to Mr. Alexander, of the Toxaway Inn, for the handsome manner in which the Association had been taken care of and entertained, and also to President Raysor and Local Secretary *Nimrod* Justus for the efforts they had put forth to make this meeting a success, and one not soon forgotten.

The Association, on motion, ordered that the railroad fare of our delegates each to be paid to the meetings of the N. A. R. D. and the A. Ph. A.

After the installation of the officers, the meeting adjourned to meet at Morehead City, July 8, 9 and 10, 1908.

P. W. VAUGHAN,
Secretary.

APPENDIX.

PAPERS.

How to Get the Physician to Use U. S. P. and N. F. Preparations in His Prescriptions Instead of the Proprietaries.

Mr. President and Fellow Members of the North Carolina Pharmaceutical Association:

GENTLEMEN:—In response to Question No. 12 of the Committee on Papers and Queries' report, I submit the following for your consideration:

Is it not a fact that the physicians of the present day have so become accustomed to the habit of prescribing proprietary preparations instead of the preparations of the Pharmacopœia and National Formulary, that the condition of affairs has become so important to the pharmacist's welfare from a professional and financial standpoint as to demand his attention? Has not the widespread habit of such use of proprietary preparations so reduced the pharmacist's profit on his professional line, as to compel him to add more side lines to his stock, whereby to regain his lost profit? It is a fact that cannot be contradicted that the majority of prescriptions on file in the pharmacies today do not call for strictly official preparations—it is frequently some special Viburnum Compound, Syrup of Hypophosphites, Essence of Pepsin, Cod Liver Oil Emulsion, Iron Tonic, or other of the many such proprietaries on the market.

When we look back to the time of our forefathers, in the profession of pharmacy—when they gathered their own herbs, roots, berries, etc., and made the finished product from these crude drugs, and then look to the present when so many preparations of a secret formula, come to us ready for delivery upon order. In some cases the pharmacist merely filled in the dose on the label; in others he only took one label off and put on another. In the olden times there was hardly any thought of proprietary preparations. Does it not seem that the pharmacists have lost some of their professional business? That they are not now performing all the work that should be done by them? It occurs to my mind that the pharmacists are at fault, as a result of such state of affairs; they have neglected too much the purely professional part of their calling, and branched out into, I fear, too many side lines, and into the world of commercialism, instead of professional pharmacy. The pharmacists have lost some of their best opportunities on account of this neglect—striving to keep pace with the rapid strides of commerce. Such has existed, until now, we see our loss and should stop to think over this question and

see what can be done to regain this business, that by right, handed down, from years and years, is ours.

When I received the report of your able Committee on Papers and Queries about two months ago, Question No. 12 (How to get the physicians to use the United States Pharmacopœia and National Formulary preparations instead of the proprietaries now used) appeared to me as one that our Association should consider, so I have taken it upon myself to suggest an answer.

(1) Go over the Pharmacopœia and National Formulary and select the many excellent preparations contained within their pages, especially those whose formulæ are similar to those preparations that the physician is now using. The Pharmacopœia and National Formulary are full of useful preparations; most any kind of remedy can be found therein. Among the many valuable ones, I would like to mention, in the Pharmacopœia:

Liniment of Turpentine.
Antiseptic Solution.
Compound Solution of Cresol.
Solution of Iron and Ammonium Acetate.
Compound Solution of Sodium Phosphate.
Effervescent Lithium Citrate.
Effervescent Magnesium Sulphate.
Mixture of Glycyrrhiza Compound.
Mixture of Rhubarb and Soda.
Oleate of Quinine.
Powdered Acetanilid Compound.
Syrup of Phosphate of Iron, Quinine and Strychnine.
Syrup of Senna.
Effervescent Citrated Caffeine.
Cataplasm of Kaolin. (Similar to Antiphlogistine, Glykol, etc.)
Resin Cerate.
Elixir of Iron, Quinine, and Strychnine Phosphates.
Emulsion of Asafœdita.
Emulsion of Cod Liver Oil.
Emulsion of Cod Liver Oil with Hypophosphites.
Emulsion of Turpentine.
Extract of Colocynth Compound.
Glycerite of Boroglycerin.
Glycerite of Phenol.
Thymol Iodide.
Ointments of Rose Water.
Diachylon Ointment.
Ointment of Nutgalls.
Bitter Wine of Iron.

In our National Formulary, among the many useful and valuable formulas, we find such as:

Compound Camphor Cerate.
Chloral Camphor.
Elixir of Ammonium Bromide.
Elixir of Ammonium Valerianate.
Elixir of Buchu and Potassium Acetate.
Compound Cathartic Elixir.
Elixir of Cinchona and Iron.
Compound Digestive Elixir. (Which is an excellent Lactated Pepsin Elixir).
Elixir of Gentian with Tincture of Chloride of Iron.
Elixir of Hypophosphites.
Elixir of Pepsin with Bismuth, Strychnine, etc.
Elixir of Potassium Bromide.
Elixir of Sodium Salicylate.
Emulsions of Cod Liver Oil, Castor Oil, etc.
Glycerite of Pepsin.
Solution of Oxysulphate of Iron.
Mixture of Chloral and Potassium Bromide.
Effervescent Potassium Bromide, with Caffeine.
Aromatic Syrup of Yerba Santa (an excellent vehicle for the administration of Quinine and other bitter medicines).
Compound Syrup of White Pine.
And many other valuable preparations, too numerous to mention at present.

(2) Get your physicians to prescribe these preparations in their prescriptions, by (1) talking about them. No better proof of this bringing good results do we want than that a prominent pharmacist of Baltimore, recently said that, from his personal experience, "all the pharmacists have to do is to talk U. S. P. and N. F. preparations." In his experience he has found that the physicians will prescribe the standard preparations seven times out of every ten. It happens quite often that the physician asks the pharmacist what kind of Solutions of Pepsin or Iron Elixirs he has in stock. There is your opportunity to hunt up the formula, show it to him and talk about these preparations. The advice of the pharmacist is often sought by the physician along such lines.

(2) Make up these preparations with care; have them to present an elegant appearance and show these to the physician. During your leisure hours put up one or two ounce sample bottles of each; label them neatly with the official title, ingredients, dose, and uses. Send these to the physicians, accompanied by a nicely type-written letter saying a good word in favor of your samples. If this plan is carried out, I do not see why the Pharmacopœia and National Formulary preparations should not become more popular with the physicians.

The physician does not fail to prescribe these preparations more

because of lack of confidence in the pharmacist's ability, or because of any question regarding the reliability of the pharmacist's preparations, but because the physicians as a rule are not thoroughly acquainted with these preparations. A prominent physician of my town said to me a short while ago, in discussing this question, "that the only way for the pharmacist to get the physicians to prescribe the preparations of the Pharmacopœia and National Formulary more, was for the pharmacist to educate them to the advantages and uses of these preparations." He said that the Pharmacopœia and National Formulary are given only short attention in the college. Speaking for himself, he said in the medical college he knew nothing of a formulary.

So, gentlemen, you can easily see that the physician looks upon the pharmacist to keep him posted regarding these matters. It is a credit to the pharmacist to do this—not only professionally, but financially as well.

The large pharmaceutical manufacturing houses have gained the demand for their goods, and the physician's recognition through continuous advertising and sampling. We know this to be a fact. Then why not look to their method and take a good lesson from them.

Another good idea is to present the physician with copies of the Pharmacopœia and National Formulary in condensed form, giving the official titles, percentage of ingredients, dose, etc.; in fact containing all information that would be of use to the physician. I have heard of the Formulary being printed for such purpose. It is an excellent manner in which to get these preparations more widely known and used, and the result would many times reimburse the pharmacist the little expense incurred.

There is much more that could be said along this line, regarding the relation of the physician and pharmacist, but I will refrain from taking your time further. In conclusion, let me say that if we pharmacists carry out the suggestions that I have mentioned, I feel confident that our relations with the physicians will be strengthened, and that our professional standard will soon attain the height that we are working for.

GEO. Y. WATSON,

At N. C. P. A., Lake Toxaway, June 13, 1907.

How Can We Secure a Greater Attendance at the Meetings of the North Carolina Pharmaceutical Association?

In the beginning I will say that the North Carolina Pharmaceutical Association is above the average in attendance in comparison with our sister State associations. However, we are not satisfied to be the "same as" or "just as good." It is our desire to be the best. I shall use numbers from the last report of our annual meeting in this paper.

With 700 registered druggists in North Carolina, 300 of whom are members of this Association, with 80 attending last year's meeting, which was the most largely attended meeeting of our history—is this not sufficient reason for us to consider seriously the question of better attendance?

Why is it that our druggists are so indifferent about attending these annual meetings? Is it the fault of us who are regular attendants? Is it that our meetings are of no interest to the majority of our druggists? Is it that we have not sufficiently urged our brother and sister druggists the necessity of supporting the State Association or, since they have secured their license to practice pharmacy, they have become ignorant of the fact that the N. C. P. A. has annual meetings? They certainly feel the power and the benefits of the Association, then why is it that they don't show their gratefulness by at least attending these annual meetings? We feel sure that if every druggist in the State knew all that had been done for him through this Association he would be interested enough to come to these meetings.

There are probably few pharmacists willing to dispute the fact that the State Pharmaceutical Association is a necessary institution, and yet only one out of about every nine in the State takes the slightest interest in this organization and contributes nothing except his dues to its support. Why are druggists over the State so indifferent to this Association? And what argument or excuse can they give for not supporting it, not only with their dues, but also with their presence, and take active part in the deliberations, giving their ideas and views? There is no excuse. The druggist is for some reason extremely liable to legislative interference, and it requires constant vigilance, prompt and vigorous action on the part of some one to preserve the rights he now enjoys. It is useless to depend on the good sense and justice of the lawmakers to resist the appeals of designing lobbyists. It is easy to arouse prejudice against the druggist and to place him in a false light before the non-technical public. There are certain interests which have always been inimical to the retail druggist and the animosity seems to increase. During the past year the druggists of this State have escaped no end of preposterous legislation, and every obnoxious bill defeated meant a hard fought battle. Yet a few are obliged to fight these battles with

the meagre support they are able to muster, while the benefits are enjoyed in common. Perhaps it is useless to appeal to the generosity of the druggist who permits others to fight his battles. He is probably laughing to himself because he has obtained so much at so little cost. There is also another plea that should appeal to the most selfish. If an association containing less than fifteen per cent of all the druggists of the State can accomplish so much, what might an organization, say supported by fifty per cent of the druggists, secure in the way of favorable legislation?

Almost every druggist believes in associations and is willing to give "the good work" the benefit of his name, but when the demand comes for his energy and time he is apt to find it too much trouble. The chief difficulty seems to lie in the very small amount of leisure time at his command. Unless the Association offers something to arouse his interest instead of tired nerves and muscles, he is likely to seek his rest elsewhere. It has been suggested to add other features, entertainments in the form of music, athletic functions and the like—whether they will have the desired effect will depend on the interest taken in them. More papers on trade interests and business shortcuts, methods of successful advertising, schemes for attracting trade, successful window dressing, modern methods for operating the soda fountain, etc., would no doubt be highly appreciated and prove of wonderful benefit. Perhaps if we would make a special effort to celebrate our Thirtieth Anniversary by sending out neat and attractive invitations to all the druggists of the State, telling of the great effort that will be made to celebrate this anniversary and for him to prepare a paper for this occasion, and that this meeting be held as near the center of the State as possible. Perhaps this may cause a large and enthusiastic meeting which will not die or be forgotten before the next great anniversary to be held five years hence. I am sure if we can once get our members in the habit of attending there will be but little trouble to make them regular attendants. I also believe it a good idea to change the members on the different committees each year, so that other members may be put into active service, and that those appointed on the committees be read immediately after the new officers are installed, and that the chairman of every committee use his best efforts to bring in the very best possible report, and that the report be prepared in due time before he comes to the annual meeting—that his report will be so good that the Association will be strengthened by his effort.

Again, are we urging the new licentiates sufficiently the necessity of joining the Association at once? Would it not be a good idea for members of the Executive Committee to come to the Association a day or two in advance of the meeting and canvass every candidate passing the examination to give his application for membership?

The traveling men representing wholesale drug houses from whom

we get our goods can do an endless amount of good in their travels by continually impressing the necessity of the druggist attending these annual meetings.

The Secretary of our Association has done a great deal to increase the attendance by sending out circular letters in advance of each meeting urging the druggists to attend. I would suggest just here a special committee appointed by the President to confer with the local associations throughout the State with a view to securing new members and a larger attendance for the State Association.

Now that I have dwelt upon the practical and serious side of our Association, it may not be amiss for me to illustrate the power of unity in a sentimental and fraternal way. Two licentiates of pharmacy were at an outing where they were having a jolly good time. Perhaps they got a wee bit too frisky—about midnight they resolved to go homeward. Well, I will not say that they entirely lost their physical and mental equilibrium, but I do say that they wandered listlessly, and as the sidewalks were too small for them they accepted the friendly influences of the broad highway. On they continued in a serpentine course until they became somewhat fatigued, when one of them exclaimed, "Comrade, in our association we have learned the power of union. Come, let us link arms." Quickly they braced each other into a normal position, which proved a benefit to both. Finally one of them slipped into a ditch and shouted to his companion to help him out. As he stood on the edge of the ditch moving like a weather-vane in the wind, he responded to his comrade's call for assistance. "Well," said he, "brother, I feel dreadfully shaky and weak; while I cannot possibly pull you out of the ditch, I will do the next best thing in order, and that is to fall into the hole with you and keep you company."

Now to make our Association a success, to make our meetings pleasant and profitable, to make our Association second to none, we must work together, we must increase our membership, and increase our attendance till every druggist in this grand old State will meet together every year. Unity of purpose, unity of thought and unity of action must be our aim and end.

CHAS. R. THOMAS.
Thomasville, N. C.

Pharmacy—A Profession or Trade—Which?

We hear much said about the profession of pharmacy, and it has occurred to the writer to consider the matter carefully and ascertain, if possible, how we should view our vocation as practiced by more than ninety per cent of the retail druggists. Is pharmacy a profession or a trade?

Does the public, severally or collectively, consider us as professional men, or as tradesmen?

Do they expect to pay us an additional profit above that allowed on a commercial transaction, and, if so, is it a fee or wage?

Is it for professional knowledge or technical skill, or is it grudgingly considered an unearned bonus demanded and collected because we are licensed by law to so do?

After a careful comparison of the attitude and expression of the average customer in the drug stores, with the same persons in their dealings with professional men, we are forced to the opinion that the public does not believe that it should pay us a fee for professional knowledge, nor does a large portion feel that they should pay for technical skill, or responsibility even. In proof of this just think for a moment how prevalent is the idea that a prescription calling for a certain quantity of liquid, or a certain number of powders, capsules or pills, should be worth a certain conventional price which is common to that particular locality, and if we charge more by reason of unusual cost of material or amount of work, this is vigorously objected to.

It is unfortunately true that most of us mix up our merchandising and our tradesmanship and fail to get reasonable pay for our technical skill, besides "throwing in" some professional knowledge to induce the customer to buy our merchandise at a small profit.

Now, this being true, what should we do, and what is more important—what can we do, to improve these conditions? The theoretical answer would be, "To be professional and charge a fee for our knowledge as such," but that is impracticable at present; so I believe the best solution of the difficulty lies along the path of a dual business.

Make the commercial end of the business more intensely commercial by conducting it as other progressive merchants do, and make the technical end of the business more professional; and let it be understood that quality and workmanship and prices are right in each department. Do not expect to get high prices for any ready made article that is offered by another store in your town unless you can show that it is *better*, *fresher*, or *cleaner*. To do otherwise creates the impression that everything in a drug store is high priced, and it would be better not to sell it at all if we must create prejudice or wrong impressions. For prescriptions let it be understood that

you charge a fair price for both material and skill and labor, and that you supply full value paid for.

If you have a manufacturing turn, it will be well to show both doctors and patients that you are master of your profession, but by all means, have your products *the peer of the best* produced in their line.

Finally, do not do any professional work such as analyses, counter-prescribing, etc., without pay over and above the value of the materials used. This will create more respect for our profession and be a source of revenue, and either compensate us for the time consumed, or what is more probable, will give us more time to push the purely commercial front of our business.

GILBERT CRABTREE,
Raleigh, N. C.

The Pharmacopoeia and National Formulary.

In a conversation with your Secretary the other day the subject of the U. S. P. and N. F. preparations, as against those of certain manufacturing houses, was discussed. In response to his invitation I have consented to prepare a paper dealing with the subject from the pharmacist's point of view.

Before entering upon my subject, however, I wish to state that I do not do so in any spirit of dictation, or desire to say what should be or not be prescribed, believe me, that is far from my desire, but I feel that the subject is one that affects both of us and one which, if properly understood by both physician and pharmacist, could and would be remedied.

And I would also like it to be understood that it is not written from any desire to advertise my own preparations, nor do I write as an advocate for the store in which I am employed, for I can freely state that any preparation I may have sent as a sample from time to time can be made at any store in town, or in the whole country, the only thing necessary being the possession of the two works recognize as authorities by the medical and pharmaceutical professions of the United States.

THE PHARMACOPOEIA AND NATIONAL FORMULARY.

While we all know there are a great many of these preparations on the market, almost every week bringing a detail man to give us something new, and every mail brings us advertising matter of other things purporting to be new. Still, I venture to state, very few of us realize the fact that the practice of medicine is more and more coming under the influence of these same manufacturers until it will be that we will get our diplomas merely to prescribe some ready made remedy which some one else tells us is a specific for this or that ill, even as we druggists sometimes feel that we only spend our years of study and pass our examinations to stand behind the prescription desk to pour some ready made preparation from one bottle into another and write a label.

Now, are the claims made for these preparations true? Are they all new? Well, in our prescription department we have seven preparations of the Listerine class, the formulæ of which are so nearly the same that their medicinal properties are practically the same. Five of the Lactopeptin order, seven of the Comp. Syr. Hypophosphites, and I could continue until I had a list as long as my arm. All claiming to have peculiar virtues of their own, but all having the same formula or a formula which could be made the same, as for instance, the one-fourth grain of Ext. Nux Vomica to the ounce of Mulford's Diastose.

Is it any wonder that the druggist when some "new one" comes

out, which he already has in stock under another name, is tempted to use the one he has? But if he should do so he would be accused of substitution. Not that he had not given the medicines prescribed, but the name. As if a name had peculiar properties and could benefit the person for whom prescribed or save a life.

As if the name Parke Davis & Company could cast a greater spell over the sick and afflicted than John Wyeth & Bro. or Sharp & Dohme.

Now, is it any wonder if he asks himself why he cannot make them and save for himself and his customers the profits that go to make rich a few men in more remote parts of the country, and my answer is, he can.

The National Formulary contains formulæ for Elix. Glycerophosphates, Elixir Lactopeptine, Essence of Pepsin, etc., as good as Fairchild, Sharp & Dohme, Wyeth, Mulford, Benson, Parke Davis, or any one else can make.

The Pharmacopœia for Syr. Hypophosphates Comp. Antiseptic solution Elixir Iron, Quinine and Strychnine, Antiphlogistine, etc. And are not the names U. S. P. and N. F. as good to conjure by as the others?

Now I hear some one say, but these men have larger plants, their facilities are greater, they make their goods on a larger scale and their experience must be greater. Granted the first two are true, but is the latter? I doubt if any but the man who has charge of the departments has any knowledge of drugs, knows the reason for the operations he performs, or has passed an examination in pharmacy. He merely acts like a machine, and as long as his product will pass the examiner he is satisfied; and can the examiner tell by look, taste or smell if every ingredient is there? If he cannot will he take the trouble to test every product before it leaves the factory to find out?

Let me ask. Would any doctor be willing to have his prescriptions filled in this manner?

On the other hand if the U. S. P. and National Formulary preparations are prescribed they are made by the druggist. A man who has made that work his life study, who has spent four years in study (as required by law) and whose ability has been proven by his being able to pass his examinations; he knows the reason for every operation he performs, and the properties of the drug he handles; he does not work in the dark, and his professional pride makes him desirous of having his preparations as near perfect as possible. And I ask you if he is competent to fill your prescriptions or to make the tinctures, syrups and ointments, that those prescriptions contain? Is he not competent also to make these other preparations?

For Antiseptic Sol. U. S. P. is as easily prepared as the most ordinary prescription. Syr. White Pine Comp. N. F. (the same as Anodyne Pine Expectorant) is not more difficult to prepare than Tr. Cinchona Co., Tr. Aconite or Tr. Belladonna. Nor does Syr. Hypo-

phosphites Co. U. S. P. require any more skill to prepare than the Syrup of Iodide of Iron or the Syrup Lactophosphate of Lime, all of which you trust the druggist to make, and never think of specifying the product of any special manufacturer.

Yet it would be just as consistent to prescribe P. D. & Co. Tr. Chinchona Co. or Fellow's Tr. Nux Vomica as P. D. & Co. Syr. White Pine Co., Fellow's Syr. Hypophosphites, or Fairchild's Essence of Pepsin. Which is more important, Tr. Nux Vomica and Tr. Aconite or a cough syrup or Pepsin Elixir? If the druggist cannot make the latter properly, can he be trusted to make the former?

Then there is the question of freshness. If you had a patient ten years or even three years ago whom you had prescribed for and who came to you with the same disease today, even though you should wish to prescribe the same medicine you did then, would you want them to take the prescription filled three years ago, if they should tell you they had a half bottle left? But who can tell how long these manufactured preparations have been made. For the policy of these houses is to make their patrons buy in as large quantities as possible so as to get the best prices. Then also it does not pay them to make their preparations in small quantities, so that often an article is at least ten years old before it is dispensed. On the contrary the druggist's facilities are limited; he cannot make them in large quantities and it does not pay him to do so; then he knows just how long a preparation will last, so there is no inducement for him to make a supply that will last a year or two. Consequently your patients get a preparation that at the most is a few months old instead of one, two or three years.

The next thing which comes to our notice is the cry of these same manufacturers that these N. F. and U. S. P. preparations are imitations of theirs, that their ideas have been stolen, and we are seeking to profit by their work and the money they have spent in advertising and detail work. Is not this the pot calling the kettle black? Look through the list of any one of these firms and see if you do not find a preparation similar to those some other house has put on the market, or let any house put on the market a preparation which has a large sale and see how quickly the other houses put out a similar preparation, which they try to induce the druggist to buy and use in place of the other because it can be bought more cheaply. Thus they encourage this same so-called substitution which they cry so loudly against.

But there is another side to the question, the patients. And on this side the prescribing of these same proprietary preparations has a very demoralizing effect which is only seen by the druggist. I cannot tell how many times I have had people ask me if I did not have some preparation of P. D. & Co., Wyeth or S. & D. for such or such complaint; that if they went to the doctor he would probably pre-

scribe some of these and I should (handling every day as I do) know which one to give as well as any doctor. Or if they came in for a patent medicine and asked, as they often do, my opinion of it and I advise them to see a physician as being the safest plan, and I always do, to have them tell me doctors prescribe them themselves, and they do not see why they should pay a doctor to tell them to take a patent medicine. These things are of daily occurrence. Unfortunately the lay mind does not seem to be able to grasp the difference.

Then comes the question of cost. The profits in the drug business have been a joke so long that it has become stale. But if we could make the profits in five years that are made on some of these preparations in one year we could retire from the drug business at the end of that time. Were I to tell the actual cost of Listerine, Glyco Thymolene and some others, I fear I should not be believed. I ask is it right to make our patients swell these profits? Should they be made to pay a dollar for 12 oz. Listerine when the U. S. P. Antiseptic Sol. can be had at 75 cents a pint, or a dollar for 8 oz. Fairchild's Essence of Pepsin when a pint of the N. F. can be had for $1.25, or $1.50 for 14 ozs. of Fellow's Syrup when a pint of the U. S. P. Syrup can be had for $1.00 and a better preparation obtained at that? I could go on indefinitely with these differences, but think these are sufficient to illustrate my contention.

In closing, let me ask you in whose hand the remedy is? If you do not think, in justice to yourselves, in justice to the druggist and your patients, it would be better to prescribe these N. F. and U. S. P. preparations, thus doing away with a system which benefits primarily and almost entirely manufacturers who do not appreciate our services?

Wm. H. Blauvelt,
Asheville, N. C.

Alkaloidal Tests.

The alkaloids are unquestionably the most important of all the organic compounds which are of interest to the pharmacist. The most active and potent remedies that he dispenses, belonging to this class of principles.

The natural bases or alkaloids are so called because they possess the power of neutralizing acids, with which they form distinct and crystallizable compounds. The name alkaloid was given to these so-called organic bases on account of their similarity in chemical character to alkalies, alkaloid meaning alkali-like. They may be divided into two classes: (1) Non-volatile alkaloids, consisting of C, H, N, and O; (2) Volatile alkaloids, consisting of C, H, and N. The non-volatile alkaloids, however, form the larger and most important class. They are, as a rule, crystallizable and colorless, insoluble in water; soluble in alcohol, chloroform, benzine, benzol, and some in ether. Their salts, on the other hand, are usually soluble in water, less so in alcohol, but insoluble in chloroform, ether, benzine and benzol. The volatile alkaloids are liquid and are capable of forming crystallizable salts with certain acids, as for an example, sparteine is an oily and volatile alkaloid, while sparteine sulphate is a white crystalline solid.

The alkaloids differ from inorganic bases in forming salts by direct union with the acid, not by substituting the hydrogen. Thus, morphine ($C_{17}H_{19}NO_3$) forms with hydrochloric acid morphine hydrochloride. This is due to the fact that the alkaloids are analogous to NH_3 rather than to NH_4, and the reaction between morphine and hydrochloric acid is similar to the reaction $NH_3+HCl=NH_4Cl$, in which the hydrogen is not replaced; in fact, the hydrogen of the acid may be regarded as combining with the morphine to form a new molecule, $C_{17}H_{19}NO_3H$, analogous to ammonium and called morphium; the compound formed would be morphium chloride or morphine hydrochloride as it really is. The formula of an alkaloidal salt includes both the alkaloidal formula and the acid formula, nothing being replaced.

Alkaloids are obtained from both the vegetable and animal kingdom. Those from the animal kingdom have a close resemblance, in chemical composition, to the vegetable alkaloids. For an example, adrenaline, from the suprarenal glands of the sheep, has the formula $C_{10}H_{15}NO_3$. This is a crystallizable alkaloid. Adrenaline forms with hydrochloric acid, under the proper conditions, adrenaline hydrochloride, having the formula $C_{10}H_{15}NO_3.HCl$. Ptomaines or cadaveric alkaloids are produced when animal substances are subjected to putrefaction or fermentation, while leucomaines are toxic alkaloids from animal excretions.

Alkaloids and alkaloidal salts of the U. S. P., eighth revision:

Alkaloids added: Aconitine, Cocaine, Codeine, Colchicine, Hydrastine.

Alkaloidal salts added: Codeine phosphate, Codeine sulphate, Homatropine hydrochloride, Hydrastinine hydrochloride, Pilocarpine nitrate, Quinine salicylate, Scopolamine hydrochloride, Strychnine nitrate, Pelletierine tannate.

Alkaloids dismissed: Cinchonine.

Alkaloidal salts dismissed: Quinidine sulphate, Quinine valerianate.

TESTS.

The pharmacopœial alkaloids and alkaloidal salts all have a bitter taste except aconite, which has a characteristic tingling sensation, and all are odorless except colchicine, which has an odor suggesting damp hay, and hyoscyamine hydrobromide, having a tobacco-like odor, and morphine acetate, which is faintly acetic.

The alkaloids are distinguished from all other plant principles by the fact that their slightly acidulated aqueous solutions give distinct and characteristic precipitates with the following reagents, known as alkaloidal precipitants:

(1) Mercuric potassium iodide, (2) Gold chloride, (3) Tannic acid, (4) Phosphomolybdic acid, (5) Picric acid, (6) Mercuric chloride, (7) Iodine-potassium iodide, (8) Potassium bismuthous iodide, (9) Phospho-tungstic acid, (10) Platinic chloride. They often produce characteristic color reactions with the inorganic acids and may be identified by the concurrence of several of these tests which, singly, are of little value.

COLOR REACTIONS OF THE ALKALOIDS.

In general it should be borne in mind that color reactions are subject to variation: (1) By impurities of the alkaloidal material, (2) By impurities of the reagent, and (3) By conditions of concentration, temperature, and time. The best authority to guide the operator is the result of a control test upon a known portion of the alkaloid in question, making all conditions as nearly identical as possible. The reagents that are employed to give color tests are: (1) Concentrated sulphuric acid; (2) Sulphuric acid followed by a minute quantity of nitric acid; (3) Sulphuric acid and cane sugar. The dry substance to be tested is mixed with six parts of cane sugar and a few milligrams of the mixture placed upon a drop or two of pure sulphuric acid on a white plate; (4) Fröhde's reagent, concentrated sulphuric acid, containing molybdic acid, 1 gm. molybdic acid to 1 cc. H_2SO_4); (5) Concentrated nitric acid; (6) Sulphuric acid containing potassium dichromate. Dissolve 0.02 gr. of $K_2Cr_2O_7$ in 10 cc. of water and add to the solution 30 gr. of conc. H_2SO_4. (7) Ferric chloride (10% ferric chloride solution in water).

The following tests will be found to be the most practical and characteristic for distinguishing the alkaloids and alkaloidal salts:

ACONITINA.—$C_{34}H_{47}NO_{11}$=640.55: Its extremely diluted solutions produce a characteristic tingling sensation when brought in contact with the mucous surfaces of the tongue or lips. (The alkaloid itself should never be tasted).

Aconitine, when dropped upon sulphuric or nitric acids, should produce no color, but if rubbed with sulphuric acid containing a crystal of ammonium vanadate, an orange color is produced.

Any soluble salt of Aconitine in very dilute solutions produces a blood-red precipitate with a drop of potassium permanganate T. S.

Sulphuric acid containing a little molybdic acid gives a yellowish color with aconitine.

APOMORPHINAE HYDROCHLORIDUM—$C_{17}H_{17}NO_2.HCl$=301.34. — Silver nitrate T. S. added to an aqueous solution of apomorphine hydrochloride throws down a white precipitate, insoluble in nitric acid, soon turning black by reduction of metallic silver, and instantly reduced by the addition of ammonia water.

Apomorphine hydrochloride is not colored when treated with sulphuric acid; with nitric acid it produces a deep blue color fading to orange; with sulphuric acid containing a trace of nitric acid a blood-red color fading to orange; with sulphuric acid containing a trace of ferric chloride, a pale blue color is produced; with sulphuric acid containing a little paraldehyde, a green color fading to orange brown.

Sulphuric acid containing a little molybdic acid gives with apomorphine hydrochloride a green to violet color.

Dilute ferric chloride T. S. colors apomorphine hydrochloride solution red (distinction from morphine, which is colored blue).

ATROPINA.—$C_{17}H_{23}NO_3$=287.04: Atropine gives no color with the inorganic acids.

Sulphuric acid containing a drop of creosol gives with atropine a pink color, which is not dissipated by the addition of a small amount of hydrated chloral (hyoscyamine gives a brown color; strychnine, a black; hyoscine remaining colorless).

Platinic chloride T. S. produces no precipitate with hydrochloric acid solution or atropine.

On dissolving a small quantity of atropine in alcohol and adding an equal amount of mercuric chloride T. S., a yellow precipitate is produced which soon turns red.

When heated with sulphuric acid atropine develops the odor of rose or orange flower blossoms; on adding fragments of potassium dichromate, this odor is replaced by that of oil of bitter almonds.

ATROPINAE SULPHAS—$(C_{17}H_{23}NO_3)_2.H_2SO_4$=677.43: Barium chloride T. S. gives with atropine sulphate a white precipitate, insoluble in hydrochloric acid.

Potassium hydroxide T. S. produces, when added to a solution of atropine sulphate, a white precipitate which should respond to the tests given under atropine.

CAFFEINA.—$C_8H_{10}N_4O_2+H_2O=210.64$: Dissolve a fragment of caffeine in sulphuric acid and add a minute crystal of potassium dichromate, a yellowish green color, which gradually becomes green, is produced.

Murexid Test.—Dissolve a little caffeine in about 1 cc. of hydrochloric acid, add a little potassium chlorate, and evaporate the whole to dryness on a water bath, then invert the dish over a vessel containing a few drops of ammonia water, the residue will assume a rich purple color (that of murexoin), which is destroyed by fixed alkalies.

The inorganic acids give no color with caffeine.

An aqueous solution of caffeine is not precipitated by mercuric potassium iodide T. S. (distinction from most alkaloids).

CINCHONIDINAE SULPHAS—$(C_{19}H_{22}N_2O)_2.H_2SO_4+3H_2O=735.05$: Heated in a glass tube, cinchonidine sulphate yields a beautiful red colored tarry residue.

Its aqueous solution yields with barium chloride T. S. a white precipitate, insoluble in hydrochloric acid.

The inorganic acids produce no color with cinchonidine sulphate.

Cinchonidine sulphate does not form fluorescent solutions nor give the thalleioquin reaction (see quinine).

Its solutions are precipitated by the alkalies and alkali carbonates, somewhat soluble in excess of ammonia water.

Dissolve a little of the salt in sulphuric acid, then add a crystal of potassium dichromate, a yellowish-green color is produced, gradually changing to grass green.

CINCHONINAE SULPHAS—$(C_{19}H_{22}N_2O)_2.H_2SO_4+2H_2O=717.17$: Its aqueous solution yields with barium chloride T. S. a white precipitate, insoluble in hydrochloric acid.

When triturated at 100°C. it glows with greenish light.

The inorganic acids give no color with cinchonine sulphate.

Cinchonine sulphate does not form fluorescent solutions nor give the thalleioquin reaction (see quinine).

Potassium ferrocyanide solution not in excess, with slightly acidulated solutions of cinchonine sulphate, gives a yellowish white precipitate of cinchonine ferrocyanide, at first amorphous, becoming crystalline, and after cooling the crystals are golden yellow.

The salt yields with ammonia water a white precipitate, sparingly soluble in excess.

COCAINA—$C_{17}H_{21}NO_4=300.92$: Neutralize an alcoholic solution of cocaine with hydrochloric acid and evaporate to dryness, the residue should respond to the tests and reactions given under cocaine hydrochloride.

If cocaine is boiled with water and calomel, the latter blackens. This reaction does not take place in the cold nor when alcohol is substituted for water.

Cocainae Hydrochloridum—$C_{17}H_{21}NO_4.HCl=337.10$: When cocaine hydrochloride is triturated with an equal part of calomel, the mixture blackens by breathing upon it or by moistening it with alcohol.

Add silver nitrate T. S. to an aqueous solution of the salt, a white precipitate is produced, insoluble in nitric acid.

A solution of potassium chromate (1 in 20) gives with a hydrochloric acid solution of the salt a precipitate of orange yellow leaflets of cocaine chromate.

Cocaine hydrochloride dissolves without color in sulphuric acid, but the solution turns brown when heated; colorless crystals of benzoic acid sublime from it along the sides of the test tube.

Cocaine produces a temporary numbness on the tongue, and has a slightly bitter taste.

Mercuric chloride T. S. produces with an aqueous solution of the salt a white flocculent precipitate.

On adding 5 drops of a solution of chromium trioxide (1 in 20) to 5 cc. of a solution of cocaine hydrochloride (1 in 50), a yellow precipitate will be produced, which redissolves on shaking; on now adding 1 cc. of hydrochloric acid, a permanent, orange colored, crystalline precipitate will be produced.

Codeina—$C_{18}H_{21}NO_3+H_2O=314.83$: Sulphuric acid containing a trace of molybdic acid gives, with codeine, a bluish color, gradually becoming deep blue.

If a few crystals of codeine be dropped into a little nitric acid in a test tube the crystals will be colored red, while the acid will be only yellow (morphine gives a red solution).

Sulphuric acid containing a trace of ferric chloride produces with codeine a violet blue color; sulphuric acid heated, with a drop of nitric acid added, gives a blood red color; sulphuric acid and codeine develop no color, but on adding a drop of a solution of formaldehyde a violet blue color is produced (morphine gives an intense purple color).

On dissolving a small crystal of potassium ferricyanide in 10 cc. of water, and adding a drop of ferric chloride T. S., and then 1 cc. of codeine solution (1 in 100), no blue color should be produced at once (absence of morphine).

Codeina Phosphas—$C_{18}H_{21}NO_3.H_3PO_4+H_2O=430.00$: Add silver nitrate T. S. to an aqueous solution of codeine phosphate, a yellow precipitate is produced, soluble in dilute nitric acid or ammonia water.

Codeine phosphate dissolves in weak chlorine water without visible change; ammonia water darkens this solution a little, and strong chlorine water gives a beautiful red coloring.

The salt melts to a yellow mass when heated.

Sulphuric acid containing a trace of ferric chloride produces a violet blue color; sulphuric acid containing a drop of a solution of

formaldehyde produces a violet blue color (morphine an intense purple).

On dissolving a small crystal of potassium ferricyanide in 10 cc. of water, adding a drop of ferric chloride T. S., and then 1 cc. of codeine phosphate solution (1 in 100), no blue color should be produced at once (absence of morphine).

Codeinae Sulphas — $(C_{18}H_{21}NO_3)_2.H_2SO_4+5H_2O=780.65$: Barium chloride T. S. gives, with an aqueous solution of codeine sulphate, a white precipitate insoluble in hydrochloric acid.

Sulphuric acid heated, with a drop of nitric acid added, gives with codeine sulphate a blood red color; sulphuric acid and codeine sulphate give no color, but on adding a drop of a solution of formaldehyde, a violet blue color is produced (moprhine sulphate yielding an intense purple color).

On dissolving a small crystal of potassium ferricyanide in 10 cc. of water, adding a drop of ferric chloride T. S., and then 1 cc. of codeine sulphate solution (1 in 100), no blue color should be produced at once (absence of morphine).

Colchicina—$C_{22}H_{25}NO_6=396.23$: Colchicine is a pale yellow, amorphous powder, having an odor suggesting damp hay, and a very bitter taste.

Sulphuric acid, or sulphuric acid containing a trace of molybdic acid gives, with colchicine, a yellowish color.

Nitric acid produces a blue color with colchicine.

A strong aqueous solution of pure phenol gives, with an aqueous solution of colchicine, a white precipitate, turning bright yellow.

Sulphuric acid containing a fragment of potassium dichromate gives, with colchicine, a greenish blue color, changing to orange.

To 5 drops of an aqueous solution of colchicine, add 5 drops of fuming nitric acid, 5 drops of ferric chloride T. S., and then heat to boiling, a yellow solution is formed, changing to olive green. When cool, shake the liquid with a little chloroform, the latter will turn ruby-red, and the aqueous solution will remain green.

Homatropinae Hydrobromidum—$C_{16}H_{21}NO_3.HBr=353.49$: Its aqueous solution is not precipitated by tannic acid T. S., or platinic chloride T. S.

Add iodine T. S. to an aqueous solution of homatropine hydrochloride, a brown precipitate is produced; silver nitrate T. S. produces a creamy white precipitate.

Dissolve a little of the salt in 1 or 2 drops of nitric acid, and evaporate to dryness, then add an alcoholic potassium hydroxide solution to the residue, a distinctively yellow color is produced.

Sulphuric acid containing a crystal of potassium dichromate gives, with a crystal of the salt, a pink color, rapidly changing to green.

Hydrastina—$C_{21}H_{21}NO_6=380.32$: Sulphuric acid containing a little chromic acid gives, with hydrastine, a bright red color.

Sulphuric acid containing a trace of molybdic acid gives, with hydrastine, a green color, changing to olive green, then to brown; sulphuric acid containing a crystal of potassium dichromate produces a red color, changing to brown; nitric acid yields a reddish-yellow color; sulphuric acid dissolves hydrastine with a yellow color, which, when heated, changes to purple.

Add nitric acid to hydrastine, a reddish-yellow color is produced, which, when diluted with water, yields a green-blue fluorescent fluid.

Dissolve a crystal of hydrastine in diluted sulphuric acid, and add a solution of potassium permanganate (1 in 10), a blue fluorescent color is produced (distinction from hydrastinine).

HYDRASTININAE HYDROCHLORIDUM—$C_{11}H_{11}NO_2HCl=223.88$: Hydrastinine hydrochloride gives a yellow solution with lime water.

To an aqueous solution of the salt (1 in 20), add bromine T. S., a yellow precipitate is produced, soluble in ammonia water.

Sulphuric acid or nitric acid produces a deep yellow color with the salt; sulphuric acid with a trace of nitric acid, gives a reddish brown color.

HYOSCINAE HYDROBROMIDUM—$C_{17}H_{21}NO_4+3H_2O=434.92$: Silver nitrate T. S. gives, with a solution of the salt, a yellowish white precipitate, insoluble in nitric acid, but the washed precipitate is soluble in an excess of ammonia water.

Sulphuric acid or nitric acid gives no color with hyoscine hydrobromide.

Ammonia water added to an aqueous solution of the salt (1 in 60) causes no change, but sodium or potassium hydroxide causes a white turbidity.

Picric acid T. S. and platinic chloride T. S. give yellow precipitates with a concentrated solution of the salt.

Add a crystal of the salt to 5 drops of nitric acid, and evaporate to dryness in a porcelain dish, then add alcoholic potassium hydroxide T. S. to the residue, a violet color is produced.

HYOSCYAMINAE HYDROBROMIDUM—$C_{17}H_{23}NO_3.HBr=367.40$: Silver nitrate T. S. yields, with a solution of the salt, a yellowish white precipitate, insoluble in nitric acid, but the washed precipitate is soluble in an excess of ammonia water.

Platinic chloride T. S. does not produce a precipitate with solutions of the salt (different from most alkaloids).

Sulphuric acid or nitric acid give no color with hyoscyamine hydrobromide.

Add a crystal of the salt to 5 drops of nitric acid, and evaporate to dryness in a porcelain dish, then add alcoholic potassium hydroxide T. S. to the residue, a violet color is produced.

HYOSCYAMINAE SULPHAS—$(C_{17}H_{23}NO_3)_2.H_2SO_4=671.43$: Barium chlo-

ride yields, with an aqueous solution of the salt, a white precipitate, insoluble in hydrochloric acid.

Platinic chloride T. S. does not form a precipitate with solutions of the salt (different from most alkaloids).

Sulphuric acid or sulphuric acid containing a little molybdic acid produces no color with hyoscyamine sulphate.

Add a crystal of the salt to 5 drops of nitric acid, evaporate to dryness in a porcelain dish, then add to the residue alcoholic potassium hydroxide T. S., a white color is produced.

MORPHINA—$C_{17}H_{19}NO_3+H_2O=300.92$: Sulphuric acid gives no color with morphine; sulphuric acid containing a trace of molybdic acid or sulphuric acid containing a trace of nitric acid forms a violet color; sulphuric acid containing a trace of selenous acid gives a blue color, changing to green, then to brown (codeine yields a green color, changing to blue, then to grass green); sulphuric acid containing a drop of a solution of formaldehyde yields an intense purple color (codeine a violet).

Nitric acid forms with morphine an orange red color, gradually fading to yellow.

Dissolve a little morphine in limewater, then add chlorine water, a bright red color is produced.

Agitate strong chlorine water with morphine, a pale yellow color is produced, now carefully add ammonia water, a brown to red color is seen at the point of contact of the two liquids.

Neutralize a solution of morphine with diluted sulphuric acid, then add a few drops of ferric chloride T. S., a blue color is produced, which is destroyed by acids, alcohol, or by heating.

To a solution of morphine add a few drops of a dilute mixture of solutions of ferric chloride and potassium ferricyanide, a deep blue color is produced.

MORPHINAE ACETAS—$C_{17}H_{19}NO_3.C_2H_4O_2+3H_2O=396.26$: On adding sulphuric acid to morphine acetate, vapors of acetic acid are evolved, which can be detected by their odor.

Add dilute ammonia water in slight excess to an aqueous solution of morphine acetate, a white precipitate is produced, which, when collected and washed, should conform to the reactions and tests given under morphine.

MORPHINAE HYDROCHLORIDUM—$C_{17}H_{19}NO_3.HCl+3H_2O=372.86$: Add silver nitrate test solution to an aqueous solution of morphine hydrochloride, a white precipitate is produced, insoluble in nitric acid.

Add dilute ammonia water in slight excess to an aqueous solution of morphine hydrochloride, a white precipitate is produced, which, when collected and washed, should respond to the reactions and test given under morphine.

MORPHINAE SULPHAS—$(C_{17}H_{19}NO_3)_2.H_2SO_4+5H_2O=752.83$: Add ba-

rium chloride T. S. to an aqueous solution of morphine sulphate, a white precipitate is produced, insoluble in hydrochloric acid.

Add dilute ammonia water in slight excess to an aqueous solution of morphine sulphate, a white precipitate is produced, which, when collected and washed, should respond to the reactions and tests given under morphine.

PELLETIERINAE TANNAS—$C_8H_{15}NO.C_{14}H_{10}O_9$=463.00: Lime water gives, with aqueous solutions of pelletierine tannate, a greenish blue precipitate; ferric chloride T. S. yields a blue black color; while platinic chloride T. S. produces no precipitate.

Sulphuric acid gives a yellow color with pelletierine tannate, which, on heating, turns to green, and finally to purple. Nitric acid produces no color.

Soluble lead, mercury, and zinc salts produce a white precipitate with aqueous solutions of the salt.

Ammonia water yields a white precipitate with the salt, soluble in excess, forming a yellowish red solution.

Sulphuric acid containing a trace of selenous acid yields a bluish green color, gradually changing to dark green, and developing a pink border.

PHYSOSTIGMINAE SALICYLAS—$C_{15}H_{21}N_3O_2.C_7H_6O_3$=410.21: Sulphuric acid or nitric acid, when slightly heated with the salt, gives a reddish color.

Hydrochloric acid yields a reddish color with physostigmine salicylate (different from most alkaloids); platinic chloride T. S. produces no precipitate in solutions of the salt (different from physostigmine sulphate).

Add potassium hydroxide T. S. to an aqueous solution of the salt, a cherry red color is produced, changing to dark red, and finally to green.

To an aqueous solution of the salt add ferric chloride T. S., a deep violet color is formed, now add a solution of chlorinated lime, a red color is produced.

Sulphuric acid containing a few granules of cane sugar produces a yellow color, changing to brown, then to purple, and finally to greenish black.

PHYSOSTIGMINAE SULPHAS—$(C_{15}H_{21}N_3O_2)_2.H_2SO_4$=643.75: Barium chloride T. S. yields, with an aqueous solution of the salt, a white precipitate, insoluble in hydrochloric acid.

Sulphuric acid or nitric acid, when slightly heated with the salt, produces a reddish color.

Hydrochloric acid gives a reddish color with physostigmine sulphate (different from most alkaloids); platinic chloride T. S. produces a yellowish white precipitate in solutions of the salt (different from physostigmine salicylate).

Sulphuric acid containing a trace of potassium iodate yields, with a crystal of the salt, a light purple color, changing to yellowish red.

PILOCARPINAE HYDROCHLORIDUM—$C_{11}H_{16}N_2O_{21}HCl=242.81$: An aqueous solution of pilocarpine hydrochloric yields, with silver nitrate T. S., a white precipitate, insoluble in nitric acid.

Rub equal parts of the salt and calomel together, a black color is produced.

Dissolve pilocarpine hydrochloride in sulphuric acid, then add a small crystal of potassium dichromate on a white porcelain surface, a bright, grass-green color is produced.

PILOCARPINAE NITRAS—$C_{11}H_{16}N_2O_2.HNO_3=269.20$: Rub equal parts of the salt and calomel together, a black color is produced.

Dissolve pilocarpine nitrate in sulphuric acid, then add a small crystal of potassium dichromate, a bright grass-green color is produced.

Place an equal volume of sulphuric acid and ferrous sulphate in a test tube, then gradually add an aqueous solution of the salt, a brown ring will appear at the point of contact of the two liquids.

PIPERINA—$C_{17}H_{19}NO_3=283.04$: Piperine dissolves in warm acetic acid with a yellowish color; if a trace of sodium nitrite be added to this, a red color is produced.

Sulphuric acid gives, with piperine, a blood red color, which disappears upon the addition of water; sulphuric acid containing about half its volume of a solution of formaldehyde gives a permanent green color.

Nitric acid colors piperine orange red; the acid is colored yellow.

Sulphuric acid containing a crystal of potassium dichromate gives, with piperine, a purple color, which, on stirring, changes to reddish brown, becoming green upon the addition of water.

QUININA—$C_{20}H_{24}N_2O_2+3H_2O=375.46$: Sulphuric acid or nitric acid produces no color with quinine; sulphuric acid containing a little molybdic acid gives a pale green color.

Thalleioquin Test.—To 1 cc. of an aqueous solution of quinine (1 in 100) add just enough diluted sulphuric acid to effect complete solution, then add 2 cc. bromine T. S., followed by 1 cc. of ammonia water, the liquid should acquire an emerald green color.

Add sulphuric acid to an aqueous solution of quinine, a bluish fluorescent fluid is obtained.

QUININAE BISULPHAS—$C_{20}H_{24}N_2O_2.H_2SO_4+7H_2O=544.33$: Sulphuric acid or nitric acid produces no color with quinine bisulphate.

Thalleioquin Test.—To 1 cc. of an aqueous solution of quinine bisulphate (1 in 100) add 2 cc. of bromine T. S., then 1 cc. of ammonia water, the liquid should acquire an emerald green color.

Aqueous solutions of quinine bisulphate show a blue fluorescence.

Barium chloride T. S. produces a white precipitate, insoluble in hydrochloric acid.

QUININAE HYDROBROMIDUM—$C_{20}H_{24}N_2O_2.HBr+H_2O=420.06$: Sulphuric acid or nitric acid produces no precipitate with quinine hydrobromide.

Thalleioquin Test.—To 1 cc. of an aqueous solution of quinine hydrobromide (1 to 100) add 2 cc. of bromine T. S., then 1 cc. of ammonia water, the liquid should acquire an emerald green color.

Its aqueous solutions when acidulated with dilute sulphuric acid shows a blue fluorescence.

Precipitate a saturated aqueous solution of the salt with sodium hydroxide T. S., filter, supersaturate the filtrate with acetic acid, then add chloroform and a little chlorine water, and shake. The chloroform will separate with a yellow color.

QUININAE HYDROCHLORIDUM—$C_{20}H_{24}N_2O_2.HCl+2H_2O=393.76$: Sulphuric acid or nitric acid produces no precipitate with quinine hydrochloride.

Thalleioquin Test.—To 1 cc. of an aqueous solution of quinine hydrochloride (1 in 100) add 2 cc. of bromine T. S., then 1 cc. of ammonia water, the liquid should acquire an emerald-green color.

Silver nitrate T. S. produces in aqueous solutions of the salt a white precipitate, insoluble in nitric acid.

Its aqueous solutions when acidulated with diluted sulphuric acid shows a blue fluorescence.

QUININAE SALICYLAS—$2C_{20}H_{24}N_2O_2.C_7H_6O_3+H_2O=935.54$: Sulphuric acid or nitric acid produces no precipitate with quinine salicylate.

Thalleioquin Test.—To 1 cc. of an aqueous solution of quinine salicylate (1 in 100) add 2 cc. of bromine T. S., then 1 cc. of ammonia water, the liquid should acquire an emerald-green color.

Ferric chloride T. S. gives, with quinine salicylate in aqueous solution, a less violet color.

When treated with diluted sulphuric acid its aqueous solutions develop a blue fluorescence.

Sulphuric acid containing a small portion of a solution of formaldehyde gives a pink color.

QUININAE SULPHAS—$(C_{20}H_{24}N_2O_2)_2.H_2SO_4+7H_2O=866.15$: Sulphuric acid or nitric acid produces no precipitate with quinine sulphate.

Thalleioquin Test.—To 1 cc. of an aqueous solution of quinine sulphate (1 in 100) add 2 cc. of bromine T. S., then 1 cc. of ammonia water, the liquid should acquire an emerald-green color.

Its aqueous solutions when acidulated with diluted sulphuric acid show a blue fluorescence.

Barium chloride T. S. produces a white precipitate in aqueous solutions of the salt, insoluble in hydrochloric acid.

Half a cc. of a 5% solution of potassium ferrocyanide produces a

carmine red color in 1 cc. of a saturated aqueous solution of quinine sulphate to which, on a glass rod, one drop of strong bromine water has been added.

SCOPOLAMINAE HYDROBROMIDUM—$C_{17}H_{21}NO_4.HBr+3H_2O$=434.92: Silver nitrate T. S. yields, with a solution of scopolamine hydrobromide, a yellowish white precipitate, insoluble in nitric acid, but the washed precipitate is soluble in excess of ammonia water.

Ammonia water added to an aqueous solution of the salt (1 in 60) causes no change, but sodium or potassium hydroxide T. S. causes a white turbidity.

Sulphuric acid or nitric acid gives no color with the salt.

Picric acid T. S. and platinic chloride T. S. give yellow precipitates with a concentrated solution of the salt.

Add a crystal of the salt to 5 drops of nitric acid, and evaporate to dryness in a porcelain dish, then add alcoholic potassium hydroxide T. S. to the residue, a violet color is produced.

SPARTEINAE SULPHAS—$C_{15}H_{26}N_2.H_2SO_4+5H_2O$=419.26: Barium chloride T. S. gives, with an aqueous solution of sparteine sulphate, a white precipitate, insoluble in hydrochloric acid.

A solution of potassium ferrocyanide or potassium ferricyanide (1 in 20) gives, with a solution of the salt, a yellow crystalline precipitate.

Sulphuric acid does not produce any color with sparteine sulphate.

Add 4 cc. of bromine water to 1 cc. of an aqueous solution of the salt, a yellow precipitate is obtained.

Chlorine water does not act on the salt, neither does any mineral acid or ferric chloride T. S.

STRYCHNINA—$C_{21}H_{22}N_2O_2$=334.73: The inorganic acids produce no color with strychnine.

Sulphuric acid containing a trace of potassium iodate produces a violet color, changing to reddish purple.

Place a few crystals of strychnine on a white porcelain surface, add a few drops of sulphuric acid, then, with a glass rod, draw a crystal of potassium dichromate across it, a play of colors is produced, first a deep blue, changing to deep violet, then to purplish red, cherry red, and finally to orange or yellow.

Strychnine has an extremely bitter taste even in very dilute solutions.

Sulphuric acid containing a little ammonium vanadate produces with strychnine a deep violet blue color, changing to deep purple, finally to cherry red.

STRYCHNINAE NITRAS—$C_{21}H_{22}N_2O_2.HNO_3$=394.30: Place a little sulphuric acid and ferrous sulphate in a test tube and slowly add to it an aqueous solution of strychnine nitrate, a brown color is produced at the point of contact of the two liquids.

Strychnine nitrate, when heated with hydrochloric acid, produces a bright red color.

Strychnine nitrate should respond to the reactions and tests given under strychnine.

STRYCHNINAE SULPHAS—$(C_{21}H_{22}N_2O_2)_2.H_2SO_4+5H_2O=850.20$: Barium chloride T. S. produces in an aqueous solution of strychnine sulphate a white precipitate, insoluble in hydrochloric acid.

Strychnine sulphate should respond to the reactions and tests given under strychnine.

VERATRINA.—Sulphuric acid produces an orange red color with veratrine, which, when heated, changes to cherry red. Nitric acid produces a yellowish color.

Hydrochloric acid gives, with veratrine when heated, a pinkish red color (different from most alkaloids).

Sulphuric acid containing a trace of selenous acid gives, with veratrine, a brownish green color; sulphuric acid when treated with a mixture of one part of veratrine and six parts of sugar produces a green color, changing to blue, finally colorless.

Carefully melt 2.5 gr. of oxalic acid in a glass tube, add 0.1 gr. of veratrine and further warm the mixture, a blood red color is produced, which solidifies to a slightly yellow colored salt.

DONAH JOSIAH ATKINS.

Coal Tar Products.

Coal Tar is one of the most complex substances with which modern chemistry has to deal. A great storehouse for the physician, a grand arsenal for the soldier, for wrapped up in this complex body is to be found some of our most useful remedies, as well as our most valuable explosives.

Coal Tar is a distillation product from coal. The art of distilling coal for gas was discovered and patented by the Earl of Dundonald in the year 1887,* and it is claimed that in the United Kingdom alone about 10,000,000 tons of coal are distilled annually.

In the distillation of coal a gas is obtained known as coal gas and used for illuminating purposes. As early as the sixteenth century this gas was used in England for lighting purposes. And about the year 1812 the streets of London and Paris were lighted by gas made from coal by distillation.* The destructive distillation of coal for this gas used for illuminating purposes led to the discovery of coal tar with all its valuable products. With the extensive use of coal gas the necessity for separate distillation ceased, and soon tar was produced in the manufacture of gas in such quantities that it could not be disposed of. It was used for heating gas retorts. It was mixed with coal dust and sawdust for making patent fuel.

For a long time it was the source of a series of hydrocarbons, oils, heavy tar and pitch. But it was only after the discovery and introduction of "Tar" colors that the substance became really valuable, and since its value as a dye has been known the price has fluctuated greatly.

Coal Tar is the primary raw material of the color industry. It is a black viscid liquid and is 1.2 times heavier than water, and as has been stated before, is a very complex substance. It contains together with carbon a great number of very interesting bodies as: hydrocarbons, phenols, bases and neutral bodies.

The neutral bodies are of little interest either as medical agents or as dyes, so they will only be mentioned.

The hydrocarbons, phenols and bases are of great importance. The hydrocarbons are the most important and will be considered first:

HYDROCARBONS.

Crotonylene	C_4H_6
Benzene	C_6H_6
Toluene	C_7H_8
O-Xylene	C_8H_{10}
M-Xylene	C_8H_{10}
P-Xylene	C_8H_{10}
Styrene	C_8H_8
Mesitylene	C_9H_{12}
Naphthalene	$C_{10}H_8$

Pseudocumene	C_9H_{12}
Methylnaphtalene	$C_{11}H_{10}$
Diphenyl	$C_{12}H_{10}$
Acenaphthene	$C_{12}H_{10}$
Fluorene	$C_{13}H_{10}$
Phenanthrene	$C_{14}H_{10}$
Fluoranthrene	$C_{15}H_{10}$
Anthracene	$C_{14}H_{10}$
Methyl Anthracene	$C_{15}H_{12}$
Pyrene	$C_{16}H_{10}$
Chrysene	$C_{18}H_{12}$
Picene	$C_{22}H_{14}$

The hydrocarbons of this group which are of interest to us are:

Benzene	C_6H_6
Toluene	C_7H_8
Xylene	C_8H_{10}
Naphthalene	$C_{10}H_8$
Anthracene	$C_{14}H_{10}$

These will be considered as coloring agents and also as remedial agents.

The neutral bodies are:

II. NEUTRAL BODIES.

Carbon Disulphide	CS_2
Ethyl Alcohol	C_2H_5OH
Acetonitrile	C_2H_3N
Thiophene	C_4H_4S
Thiotolene	C_5H_6S
Thioxene	C_6H_8S
Benzonitrile	C_7H_5N
Phenylthiocarbamide	$C_7H_8N_2S$
Carbazole	$C_{12}H_9N$
Phenylnaphthyl Carbazole	$C_{16}H_{11}N$
Coumarone	C_8H_6O

III. BASES.

Pyridine	C_5H_5N
Pyrrol	C_4H_5N
Picolene	C_6H_7N
Lutidine	C_7H_9N
Collidine	$C_8H_{11}N$
Aniline	C_6H_7N
Quinoline	C_9H_7N
Quinaldine	$C_{10}H_9N$
Acridine	$C_{13}H_9N$

IV. PHENOLS.

Phenol	C_6H_6O
O-Cresol	C_7H_8O
P-Cresol	C_7H_8O
M-Cresol	C_7H_8O
A-Naphthol	$C_{10}H_8O$
B-Naphthol	$C_{10}H_8O$

The proportions of these different constituents vary greatly with the kind of coal employed and with the temperature to which the retorts are heated. Usually the aromatic hydrocarbons greatly predominate, and only small quantities of the hydrocarbons of the methane and ethylene series are present. If a low temperature is used in the distillation the quantity of the fatty hydrocarbons is much increased, and the value of the tar is consequently diminished.

The proportion of thiophene (C_4H_4S), which is a sulphur derivative, depends on the amount of sulphur contained in the coal. Scotch and German tar usually containing much more than tar obtained from English coal.*

Of the many constituents of coal tar the only ones which are at present employed in medicine and the color industry are:

Benzene	C_6H_6
Toluene	C_7H_8
Xylene	C_8H_{10}
Naphthalene	$C_{10}H_8$
Anthracene	$C_{14}H_{10}$
Phenol	C_6H_6O
Cresol	C_7H_8O

In order to isolate the valuable products, the tar is first submitted to a preliminary distillation, from large wrought iron stills, capable of holding 10 to 40 tons, by which it is separated into the following portions:

1. First Runnings containing..... 3 to 8% of tar.
2. Light Oils containing..... 3 to 8% of tar.
3. Carbolic Oils containing..... 8 to 10% of tar.
4. Heavy Oils containing..... 8 to 10% of tar.
5. Anthracene Oils containing.....16 to 20% of tar.

After the above distillation has been carried out, a residue is left in the still, which is about 50% of the original substance.

From the first runnings and the light oils the benzene, toluene and xylene are obtained, and from the carbolic oils, the phenol, cresol and naphthalene are obtained, while from the anthracene oils anthracene is obtained.

In the further working of the first runnings and the light oils, these products are submitted to a fractional distillation, by means of

which a low boiling portion containing acetonitrile (C_2H_3N) fatty hydrocarbons, and carbon disulphide are removed.

The middle or intermediate portion is then subjected to a series of washings with caustic soda, strong sulphuric acid, and finally water. The caustic soda removes the phenols C_6H_6O, C_7H_8O and $C_{10}H_8O$, and then sulphuric acid is added, which removes the bases, such as pyridine (C_5H_5N, and quinoline (C_9H_7N). Then the product is again submitted to fractional distillation and from the crude benzol (C_6H_6) thus obtained pure benzene (C_6H_6), toluene (C_7H_8), and Xylene (C_8H_{10}) are separated by rectification in a peculiar kind of still known as a Savalle still. This still is so constructed that the vapor is caused to pass through a long column divided into a series of chambers by perforated plates, in which the higher boiling portions are condensed and returned to the still.*

The hydrocarbons which distill over just after the xylene (C_8H_{10}) have at present found no use in the color industry, but are usually employed as a certain solvent known as solvent naphtha. The crude benzol (C_6H_6), which is obtained from Scotch and German tars, contains considerable quantities of thiophene (C_4H_4S), which must be removed before the final rectification in the Savalle still. This may be done by agitation with 5% of concentrated sulphuric acid; this is not always necessary with benzol from English Tar.*

Naphthalene, which will be considered under the head of coal tar colors, is used as a remedial agent. It is obtained from the carbolic and heavy oils, from which large quantities crystallize out on standing, and is separated by thorough agitation and then pressing. Small quantities are also obtained from the carbolic oils after the phenols have been removed by treatment with caustic soda, and from the so-called dead oils obtained in the purification of the first runnings and light oils.

The crude naphthalene is washed with hot aqueous caustic soda to remove phenols, and then ignited with 5 to 10% of concentrated sulphuric acid to remove such bases as pyridine (C_5H_5N), picoline (C_7H_7N), and pyrrol (C_4H_5N) and other impurities, after which the naphthalene is washed with very dilute alkalies and finally sublimed. The naphthalene thus obtained is nearly chemically pure, and is used for the manufacture of a line of naphthols.

For the extraction of phenol and cresol the carbolic oils are agitated with a dilute solution of caustic soda, sufficient to dissolve the phenols. The aqueous alkaline liquor is drawn off from the oil, and steam is blown through it to remove small quantities of naphthalene and other hydrocarbons which it still contains. The phenols are then precipitated by neutralizing with either sulphuric acid or hydrochloric acid, then separating from the solution and submitted to a series of fractional distillations. The phenol is in this way obtained chemically pure as a white crystalline solid.

The higher phenols of this group are not isolated, but are commercial products, and are used for coating certain timbers, which process is known as creosoting. Phenol and creosote and their derivatives, as will be shown later, are largely used as antiseptics and medicinal agents, but have only a limited application in the color industry.

The last portion of the coal tar distillation of which anthracene oil is the constituent, and is a thick, buttery, greenish mass, which contains anthracene ($C_{14}H_{10}$), phenanthrene ($C_{14}H_{10}$), methylanthracene ($C_{16}H_{12}$), and other bodies of the hydrocarbon series.

For the extraction of anthracene, the oil is called the anthracene oils, which separates out mixed with other hydrocarbons, and is freed from the oily mother liquor by pressing and agitating. The greenish gray mass thus obtained contains only from 10 to 12% of pure anthracene. This product is then submitted to a hydraulic pressure, and by this means a large part of the phenanthrene ($C_{14}H_{10}$) and naphthalene ($C_{10}H_8$) is removed, and the anthracene value of the product is raised from 25 to 40%. For further purification the crude anthracene is washed with solvent naphtha or with light petroleum spirit, in which the anthracene is less soluble than the accompanying phenanthrene. The anthracene thus purified usually has a value of from 50 to 60% and is sufficiently pure for use.

Very recently pyridine (C_5H_5N) bases or a mixture of these with solvent naphtha have been successfully employed for the washing of anthracene. By this means the carbazol is more completely removed, and the value of the product in anthracene is raised to about 80%.

To obtain the chemically pure anthracene the commercial product is ground up with a mixture of caustic potash and lime, and submitted to distillation, after which it is again washed with solvents and finally sublimed.

When we consider the great number of hydrocarbons, bases and phenols of the aromatic series which coal tar contains, it is remarkable how few are at present employed as raw products in the color industry. This is largely due to the difficulty of isolating the others in a state of purity; it is probable, however, that the progress of research will enable many of these bodies to be utilized, which are at present of no value.

Of the many products from coal tar, one of the most valuable is Benzene (C_6H_6). This was discovered by the great English scientist Farady in 1825.

Benzene is the source of aniline which supplies us with a series of colors of great value. The first aniline color was discovered by William Perkins in 1856. He was a young man eighteen years old, and was engaged in a series of experiments. His purpose was to make quinine synthetically from coal tar. He did not succeed in making quinine, but he did give to the world the greatest color scheme known, and with his discovery a new industry was born.

Aniline dyes have come to stay and in aniline red we have one of our most valuable artificial dyes. Following the discovery of aniline red, green, violet, blue, and yellow dyes were discovered in rapid succession until their variety is almost bewildering. But benzene yields something more than aniline colors. It furnishes us with a very useful perfume known as the artificial oil of bitter almonds and is well known to every soap-maker.

In the year 1820 a chemist named Garden discovered that coal tar contained a very peculiar ingredient, and the chemist who followed out the work called the substance which Garden had discovered naphthalene, and from this substance many valuable colors are obtained. Following the discovery of naphthalene, in 1832 anthracene was discovered. At first its value was not recognized, but later this was realized and it is now the source of the familiar color known as turkey red. And with the discovery of this valuable product from coal tar the madder fields of France were wiped out of existence.

The most brilliant achievement in the chemistry of coal tar is the synthesis of indigo. The indigo problem was one of the oldest of chemistry. Scientists for years labored with the hope of making indigo synthetically, but for a long time it was only an experiment, but at last the German chemist Baeyer solved the problem and showed that indigo could be made synthetically.

But we must not forget that this triumph was not due wholly to chemical science. Science in this case as in many others only showed the way to succeed, and it only becomes possible by the changes in certain economical conditions showing that sooner or later the indigo farms must go as did the madder fields.

Besides the many valuable dyes obtained from coal tar, it also has artificial flavoring extracts. The vanilla bean as well as the indigo and madder plantations has to some extent been put to shame, and each day we are eating our foods flavored with vanilla, not from the vanilla bean, but from vanilla made synthetically from coal tar.

Not only does coal tar furnish us valuable dyes, but its greatest usefulness is as a medicinal agent. To study it successfully as a medicinal agent it is best to divide it into two classes, namely:

1. The official solid products from coal tar.
2. The official liquid products from coal tar.

Under the first head are: Phenol, Acetanilide, Antipyrine, Phenacetine, Salol, Betanaphthol, Naphthalene, Sulphonal, Trional.

In the distillation of coal tar the first product obtained is a thick heavy liquid known as carbolic oil. To make the official phenol or carbolic acid this substance is mixed with a suitable proportion of caustic soda in an iron vessel and diluted with water to five times its volume. After settling, the aqueous layer is drawn off into a lead lined vessel, and the soda is supersaturated by sulphuric acid; crude carbolic acid rises to the top as an oil, and is then drawn off to be sold as crude carbolic acid, or to be purified.

PHENOL, CARBOLIC ACID—(C_6H_5OH).

Chemically, as may be seen by the formula, it is a hydroxide of the benzene radical. It is one of the numerous constituents of coal tar. Among the many names it has received are phenic acid, phenyl alcohol and coal tar creosote, but the latter name is more frequently applied to an impure mixture of carbolic acid and the allied cresylic acid. This name properly belongs to another distinct substance.

Phenol occurs in that portion of the distillate from coal tar which distills over between 100 C. and 250 C., and is present in this oily product to the extent of 4 to 10%.

Phenol may be obtained from the above named distillate by agitating it with a 10% solution of sodium hydroxide, and on standing the mixture separates into two layers, the lower layer being a solution of sodium phenol (C_6H_5ONa.), while the upper liquid portion consists of an extracted oil. This lower layer is carefully drawn off and treated with either hydrochloric acid or sulphuric acid in such quantities as is sufficient for exact decomposition.

In ome cases the sodium phenol solution, for the purpose of purification, is treated first with one-eighth of the necessary quantity of the hydrochloric acid, and by this the homologous phenols are separated, and then after the removal of these the solution is completely decomposed by the acid.

The impure phenol thus liberated rises as an oily layer to the surface, which after removal, is washed with a concentrated solution of common salt (NaCl), and then freed from water by using calcium chloride, and then distilled between the degrees 180 and 190 C. Upon exposure in a cool place the distilled phenol congeals to a beautiful crystalline mass, which, after being freed from adhering liquids, is again distilled, and that portion distilling over at 185 C. is carefully collected and crystallized as the official phenol.

DESCRIPTION OF PHENOL.

Phenol occurs in a beautiful crystalline mass or in long needle-like crystals, having a faint aromatic odor and when properly sealed and protected is free from color.

SOLUBILITY OF PHENOL.

Phenol is very soluble in glycerin and fixed oils, also in alcohol and ether, but requires 20 parts of water for solution. Phenol is usually dispensed with a small amount of glycerin when a permanent aqueous solution is to be made.

TESTS FOR PHENOL.

1. Phenol should have a boiling point no higher than 188° C.

2. Phenol when heated on a water-bath should volatilize without leaving a residue, and the vapors which are given off should be inflammable.

3. If to an aqueous solution of phenol bromine water be added there will appear a white precipitate of tribromphenol, which at first redissolves, but becomes permanent as more of the reagent is added, and is crystalline when viewed under the microscope.

4. 10 Cc. of an aqueous solution of phenol with 1 drop of ferric chloride test solution gives a violet blue color which is permanent.

TOXICOLOGY AND DOSE OF PHENOL.

Phenol is a powerful poison, and because of its being such a widely used antiseptic, it is often used for suicidal intent; alcohol has been used very effectually as an antidote. Oils and glycerin should never be used in treating phenol poisoning, as they make the poison more soluble, causing a more complete absorption of the drug.

Phenol is sometimes given as an internal antiseptic in doses of 1 grain.

ACETANILIDUM—ACETANILIDE (C_8H_9NO).

Acetanilide is also known chemically as phenylacetamide. This is a very important preparation, and is a derivative of aniline, and hence, is indirectly a derivative of benzene. It is one of a class of chemicals known as anilides, which are the derivatives of aniline by the replacing of one or both hydrogen atoms of the amido group NH_2 by an alcohol or an acid radical. Acetanilide is prepared by heating in a flask connected with a reflux condenser a mixture of equal parts of aniline and glacial acetic acid until a small portion of the mixture when removed from the flask congeals on cooling. The mass is then distilled, when water and acetic acid first pass over, and then acetanilide, which is then recrystallized from boiling water.

Description. Acetanilide is seen in shining crystals or in a white crystalline powder permanent in the air.

Solubility. Acetanilide is slightly soluble in water, taking 180 parts of water to dissolve one part of acetanilide. Boiling alcohol is the best solvent, while cold alcohol requires 2.5 parts to dissolve one part of the drug.

Tests for Acetanilide. (1) If acetanilide be heated to 113° C. it melts, and if it then be heated to 295° C. it boils without decomposition. (2) If 0.5 gm. of acetanilide be agitated with 5cc of colorless sulphuric acid in a clean test-tube, it should dissolve without giving color to the liquid. (3) On heating 0.1 G of acetanalide with 5 cc of concentrated solution of potassium hydroxide, the characteristic odor of aniline is noticeable. On now adding 1 cc of chloroform, and again heating, the disagreeable odor of phenylisocyanide is evolved.

Acetanilide is poisonous in large doses. It acts as a powerful heart depressant, and should be dispensed with caution. Many headache remedies have for their active ingredient acetanilide. The dose of acetanilide is 5 gr.

ANTIPYRINA—ANTIPYRINE ($C_{11}H_{12}N_2O$).

Antipyrine is one of the oldest antipyretics. It was at first made by Knorr in 1873. This preparation was at that time a synthetic preparation. It is now a derivative of coal tar, and is made by heating phenylhydrazine with acetoacetic ether. The compound thus obtained is then dissolved in methyl alcohol and treated with methyl iodide, the methyl iodide uniting and forming an addition product, which, when further treated with sodium hydroxide solution, separates the antipyrine in the form of a heavy oil, hydriodic acid being split off. The oily product is then dissolved in ether or toluene and crystallized. Antipyrine forms salts with acids by direct addition.

Description of Antipyrine.—Antipyrine is seen in colorless crystals or in a white crystalline powder.

Solubility. Antipyrine is soluble in its own weight of water, also very soluble in chloroform and alcohol.

Tests for Antipyrine. (1) Antipyrine when heated to 113° C. melts. Upon ignition it is consumed without leaving a weighable residue. (2) If to an aqueous solution of antipyrine, tannic acid T. S. be added, an abundant white precipitate of tannate is formed. (3) If 0.1 gm. of sodium nitrate be added to 12 cc of an aqueous solution of antipyrine, a nearly colorless liquid is obtained, which, upon the addition of 1 cc of diluted sulphuric acid, develops a deep green color. (4) If 2 cc of a diluted aqueous solution of antipyrine, 1 drop of ferric chloride T. S. be added, a deep red color is produced, which, upon the addition of 10 drops of sulphuric acid, is changed to light yellow.

Toxicology and Dose. Antipyrine has a dangerous action on the heart, so must be used with caution. It is nevertheless one of the first modern antipyretics; it is given in 5 gr. doses.

ACETPHENETIDUM—ACETPHENETIDIN ($C_{10}H_{13}NO_2$).

Phenactin is indirectly a benzene derivative being made from phenol by first acting on the phenol with diluted nitric acid. By this reaction ortho and para compound is afterward decolorized and crystallized and treated with sodium hydroxide, forming sodium nitrophenol. By heating this compound with ethyl iodide are obtained, the former being converted into the para-amidophenetol or paraphenetidin, by the action of nacent hydrogen obtained by the action of hydrochloric acid on zinc. If the paraphenetidin be then boiled for some time with glacial acetic acid the product is converted into acetparaphenetidin, in the same manner in which acetanilide is formed from aniline.

Description. Phenacetin is seen in the form of a white crystalline powder or in crystalline scales, odorless and tasteless.

Solubility. Phenacetin is almost insoluble in water, but is readily soluble in alcohol; it may be adulterated with acetanilide, but by certain tests we are able to detect such adulterations.

Tests. Phenacetin when heated to 135° C. melts, and at a higher temperature burns without leaving a weighable residue.

(2) Phenacetin dissolves without color in sulphuric acid, but if shaken with nitric acid it assumes a yellow color, which color persists when heated.

(3) If 0.1 gm. of phenacetin be boiled for 1 minute with 1 cc of concentrated hydrochloric acid and the solution diluted with 10 cc of water, then cooled and filtered, it should yield on the addition of 3 drops of an aqueous solution of chromium trioxide a ruby red color.

(4) On heating 0.1 gm. of phenacetin with 5 cc of a concentrated solution of potassium hydroxide the odor of aniline should not be noticed. (This test distinguishes phenacetin from acetanilide).

Dose and Use. Phenacetin is a valuable antipyretic in doses of 5 to 15 gr.

PHENYLIS SALICYLAS—SALOL, ($C_6H_4(OH)CO_2C_6H_5$).

Salol is a phenol derivative and may be prepared in several different ways; it is best prepared by treating a mixture of sodium phenol and sodium salicylate with phosphorus oxychloride, or by passing a slow current of carbonyl chloride into a warm mixture of the two salts. In both these cases new sodium salts are formed as by products, and the resulting phenyl ester is dissolved in alcohol and crystallized.

Salol is also prepared by the simple process of heating salicylic acid and phenol contained in a flask with a long narrow neck. This flask is heated on an oil bath to 225° C., air is excluded by passing a stream of carbon dioxide into the flask, the long neck of which permits only the vapors of water and carbon dioxide to escape. The salicylic acid is first changed by heating, into its anhydride; this is then split up into phenyl salicylate and carbon dioxide. The resulting compound is dissolved in alcohol and then crystallized.

Description. Salol is a white crystalline powder with a faint aromatic odor, slight characteristic taste.

Solubility. Almost insoluble in water, soluble in alcohol, but very soluble in hot alcohol and ether. Salol is also soluble in chloroform and fixed oils and volatile oils.

Tests for Salol. (1) Salol when heated to 42° C. melts and at a higher temperature is consumed, leaving no weighable residue. (2) If to the alcoholic solution be added diluted ferric chloride T. S. a violet color is produced. (3) If 0.2 gm. of salol be dissolved in a little warm sodium hydroxide T. S., and the solution then be acidified with hydrochloric acid, salicylic acid separates and the odor of phenol is noticed. (4) Salol should not redden blue litmus paper. (5) If 1 gm. of salol be shaken with 50 cc of water and the liquid filtered and barium nitrate T. S. be added there should be no turbidity produced.

Dose and Uses. Salol is used internally as an antiseptic; it is also sometimes used to coat pills; the dose of salol is 15 gr.

BETANAPHTHOL ($C_{10}H_7OH$).

This compound has been known as naphthol and is still known by that name in some countries. This product occurs naturally in coal tar, but is usually made artificially from naphthalene, to which it bears the same relation that phenol bears to benzene. Naphthalene, when heated with concentrated sulphuric acid, forms naphthalene-sulphonic acid, of which two varieties occur, designated as alpha and beta acids. The formation of these two acids depend upon the temperature employed, the alpha acid being produced at 10° C., but is changed to the beta variety as the temperature rises. Both these acids, when treated with milk of lime, yield the respective calcium naphthalene-sulphonates, from which the corresponding sodium salts are obtained by decomposition with sodium carbonate. The sodium salts, fused with caustic soda, yield sodium naphthol and sodium sulphite, which, by treatment with hydrochloric acid, are converted into sodium chloride and alpha or betanaphthol, as the case may be. The final product is purified by sublimation and then by recrystallization from water.

Betanaphthol is sometimes contaminated with alphanaphthol, which may be detected by adding chlorinated lime to an aqueous solution of the suspected article.

Description. Betanaphthol is seen in shining crystals or a yellowish white crystalline powder, permanent in air.

Solubility. Betanaphthol is very slightly soluble in water, very soluble in ether and chloroform, or solutions of alkali hydroxides.

Tests: (1) Betanaphthol melts at 122° C. and boils at 286° C. It sublimes readily when heated, when in alcoholic solutions it is volatilized with the vapors of alcohol, and if ignited it leaves no residue. (2) A cold saturated aqueous solution of betanaphthol, when mixed with ammonia water, shows a faint bluish fluorescence. (3) If ferric chloride T. S. be added to an aqueous solution a green color is produced, and after standing for sometime causes the separation of white flakes, which turn brown upon the application of heat.

Dose and Use. Betanaphthol is used externally in skin diseases, and has been given internally in doses of 5 gr.

NAPHTHALENE—NAPHTHALIN ($C_{10}H_8$).

Naphthalene is a hydrocarbon of the benzene series and occurs in coal tar. It is found in the heavy oil distilled from coal and is deposited as a dark colored crystalline substance from the fraction collected between 180° C. and 250° C. This crude naphthalene is then purified by successive treatment with sodium hydroxide and sulphuric acid to remove the acid and basic products, after which it is repeatedly heated with steam, and is finally resublimed. The white naphthalene thus obtained still has a tendency to darken when exposed to the air and light. To overcome this, it is treated for a

short time with a mixture of sulphuric acid and manganese dioxide at 100° C. and finally the product is washed with a weak solution of sodium hydroxide and water and again sublimed. For use in medicine and pharmacy naphthalene which has been recrystallized from alcohol should alone be used.

Description. Naphthalene is seen in shining crystals, which are volatile in the air, and if exposed to light acquires a brownish color.

Solubility. Naphthalene is insoluble in water, but slightly soluble when boiled with water for sometime. Naphthalene is soluble in 13 parts of alcohol and very soluble in boiling alcohol, very soluble in ether chloroform, and fixed oils, also in volatile oils.

Tests. (1, Naphthalene volatilizes slowly at ordinary temperatures, but is very volatile when heated. It also volatilizes with the vapors of water or alcohol. At 80° C. it melts, and at 218° C. It boils. The vapors from naphthalene are highly inflammable, burning with a luminous but smoky flame. When ignited, it is consumed, leaving no residue. (2) If a small portion of naphthalene be shaken with concentrated sulphuric acid the acid should remain colorless, and should acquire not more than a pale reddish tint if the mixture be heated for five minutes on a water-bath.

Doses and Uses. Naphthalene is used as an insecticide to prevent the ravages of moths in clothing, and for this reason has largely taken the place of camphor. Naphthalene can be given in doses of 2 gr.

Sulphonmethane—Sulphonal ($C_7H_{16}S_2O_4$).

This preparation is best known in commerce under its trade-name, which is sulphonal, and in the drug business is known under that name.

The first step in the manufacture of this product, is the preparation of mercaptol, which is a condensation product obtained by passing dry hydrochloric acid gas into a mixture of anhydrous acetone and anhydrous ethyl hydrosulphide or ethyl mercaptan, water being eliminated.

Mercaptol is an oily liquid of exceedingly disagreeable odor, which may be purified by washing with water, and afterwards with dilute solution of sodium hydroxide. Upon agitating mercaptol with a 5% solution of potassium permanganate until the color of the potassium permanganate remains unchanged, in this process oxidation takes place and sulphonal is formed. And from this the new product may be obtained absolutely pure by crystallization from water or alcohol. Three compounds which bear a close relation to sulphonal have been introduced into medicine and pharmacy, one of which is official is known as trional, which will be considered later.

Sulphonal as seen in the market is a crystalline powder or colorless crystals which are odorless and tasteless.

Sulphonal is only slightly soluble in water, but is much more

soluble in boiling water, while in alcohol it is very soluble. In ether and chloroform it dissolves to some extent.

Suphonal may be told by the following tests:

(1) If sulphonal be treated to 125° C. it melts, and if heated to a red heat it is consumed, giving off vapors of sulphur dioxide, and leaves no residue. (2) If 0.1 gm. of sulphonal be heated with 0.1 gm. of powdered charcoal in a dry test-tube, the unpleasant odor of mercaptan will be noticed. (3) If 0.1 gm. of sulphonal be gradually heated with dry sodium acetate the familiar odor of hydrogen sulphide is detected. (4) After boiling and filtering a solution of sulphonal and then adding a few drops of potassium permanganate T. S. there should be no precipitate. (5) If one drop of potassium permanganate T. S. be added to an aqueous solution of sulphonal, the liquid should not be immediately decolorized.

Sulphonal is used in medicine for its hypnotic action, and is usually given in doses of 15 gr.

Another product closely allied to sulphonal and perhaps more used, is sulphonethylmethane, known under the trade name of trional.

Trional is made by preparing mercaptol, a condensation product obtained when dry hydrochloric acid gas is passed into a mixture of methylethylketone and anhydrous ethyl mercaptan, water being eliminated. Mercaptol is then purified by washing with water and solution of sodium hydroxide. The next step is then to agitate the mercaptol with a 5% solution of potassium permanganate until the color of the potassium permanganate remains unchanged. Oxidization takes place, and trional is formed. The product may then be purified by crystallization from water or alcohol.

Trional as we see it is in colorless crystals or in crystalline scales. It is very slightly soluble in water, but readily soluble in alcohol and ether.

Trional may be identified by the following tests:

(1) If trional be heated to 76° C. it melts, and at a red heat is consumed, evolving sulphur dioxide and leaving no weighable residue. (2) If 0.1 gm. of trional be heated with 0.1 gm. of powdered charcoal in a dry test-tube, the characteristic unpleasant odor of mercaptan will be developed. (3) If 0.1 gm. of trional be gradually heated wtih dried sodium acetate, the odor of hydrogen sulphide will be noticed.

Trional is a very widely used hypnotic and sedative, but should be handled with caution. It can be given in doses of from 5 to 15 gr.

The coal tar products that have been considered up to this time have been the solid products, which to the pharmacist are by far the most important. But now we come to consider the liquid official products from coal tar and cresol is the only one. Cresol was made official in the U. S. Pharmacopœia in 1900.

Cresol is a very important product from coal tar, and was discovered because of its marked antiseptic properties. It is obtained from

coal at a temperature of 150° C. by treatment with sodium hydroxide solution; to this mixture then is added water and hydrochloric acid, the hydrocarbons and tarry matter are removed, and the cresols are removed by precipitation by adding to the clarified filtrate more hydrochloric acid, in limited quantities insufficient to liberate the phenol present, which latter remains in solution. The resulting product is redissolved in sodium hydroxide solution and again treated with hydrochloric acid as before. The liquid then appears as a precipitate; the liquid is then distilled and the portion distilling over between 180° C. and 200° C. is known as crude cresol. Then by further purification and distillation the official cresol coming over between 195° C. and 205° C. is obtained.

Cresol is sometimes known as tricresol, due to its being a mixture of cresols. It is seen as a colorless or straw colored liquid, and when exposed to light turns to a yellowish brown color and develops a phenol like odor.

Cresol is heavier than water, and is soluble to a small extent in water. It is very soluble in alcohol, and mixes with it in all proportions. It is also soluble in ether, benzene and glycerine.

Cresol may be easily identified by the following tests: (1) Cresol boils when heated to 200° C. (2) If 1 cc of cresol be mixed with 1 cc of an aqueous solution of sodium hydroxide it should dissolve without a liquid residue. (3) If 1 cc of cresol be mixed with 1 cc of glycerine, a clear solution should be produced, from which, on the addition of 1 cc of water, the cresol should completely separate.

Cresol is one of the most valuable antiseptics known to the pharmacist. It combines with certain alkalies to form soaps, one of which is official, known as compound solution of cresol.

David Simeon Chapman.

The Drugs and Their Derivatives Included in the Pure Food and Drug Law, and Some Practical Tests for Their Identification.

The Pure Food and Drug Law was enacted by Congress on June 29, 1906, was approved by the President on June 30, and became effective January 1, 1907.

The Act defines under the head of "Prohibitions under Misbranding clauses," in Regulation 28, Section 8,—second under "Drugs:" Those drugs and their derivatives, if present in a package, then the package shall bear a statement on the label of the quantity or proportion contained therein.

The drugs and their derivatives included in Regulation 28, Section 8, are:

Alcohol.—Derivatives: Aldehyde, ether, ethyl acetate, ethyl nitrite, and paraldehyde.

Opium.—Derivatives: Morphine and codeine.

Morphine.—Derivatives: Apomorphine, dionine, peronine, morphine acetate, hydrochloride, sulphate, and other salts of morphine.

Codeine.—Derivatives: Codeine sulphate, phosphate, hydrochloride, and other salts of codeine.

Cannabis Indica.

Chloral hydrate.—Derivatives: Chloral acetophenonoxim, chloral alcoholate, chloral-amide, chloralimide, chloral orthoform, chloralose, dormiol, hypnal, and uraline.

Acetanilid.—Derivatives: Acetphenetidin, citrophen, diacetanilid, lactophenin, methoxyacetanilid, methyl acetanilid, and para-iodo-acetanilid.

Cocaine (alkaloid).—Derivatives: Cocaine hydrochloride, oleate, and other salts of cocaine.

Heroin.

Alpha and Beta Eucaine.

Chloroform.

Of this list a group of practical tests is given for each drug and also for its derivatives with the exception of a few derivatives of morphine, chloral, and acetanilid, namely: dionine, peronine, (derivatives of morphine), chloral alcoholate, chloralimide, chloral acetophenonoxim, chloralose, dormiol, hypnal, and uraline, (derivatives of chloral hydrate), and iodoacetanilid, methyl acetanilid, lactophenin, and citrophen, (derivatives of acetanilid). Of the derivatives for which I give no tests, some are proprietary, and their chemical composition is not fully known. Although it is given by Coblentz on "Newer Remedies" and also in certain text books on chemistry, the chemical nature of the others has not been definitely established. And although they respond to some of the tests under the compound

from which they are derived, no positive chemical tests of importance have been given as yet.

List of reagents used in the following tests and preparation of these reagents:

1. Ferric Chloride Test Solution.—29 gm. of ferric chloride in 71 cc. of water.

2. Mercuric Cyanide Test Solution.—5 gm. of mercuric cyanide in 30 cc. of water.

3. Mercuric Chloride Test Solution.—5%=1 gm. of mercuric chloride in 19 cc. of water.

4. Mercuric-Potassium-Iodide Test Solution (Mayer's Reagent).—22.7 gm. of mercuric iodide and 16.6 gm. of pot. iodide in 1,000 cc. of water.

5. Picric Acid Test.—10 gm. of picric acid in 90 cc. of water.

6. Mercuric Bromide Test Solution.—1 gm. of mercuric bromide in 215 cc. of water.

7. Potassium Dichromate Test Solution.—5%=2.5 gm. of pot. dichromate in 47.5 cc. of water.

8. Potassium Ferrocyanide Test Solution.—1 gm. of pot. ferrocyanide in 19 cc. of water.

9. Potassium Ferricyanide Test Solution.—1 gm. of pot. ferricyanide in 19 cc. of water.

10. Sodium Hydroxide Test Solution.—35 gm. of Sodium hydroxide in 250 cc. of water.

11. Sulphuric Acid (containing Chromic Acid) Test Solution.—2 gm. of chromic trioxide in 10 cc. of water and add 30 gm. of con. sulphuric acid.

12. Sulphuric Acid (containing Potassium Permanganate) Test Solution.—2 gm. of pot. permanganate in 10 cc. of water and add 30 gm. of con. sulphuric acid.

Nos. 11 and 12 to be freshly prepared when needed.

13. Tannic Acid Test Solution.—1 gm. of tannic acid in 10 cc. of water.

14. Bromine Test Solution.—1 cc. of bromine in 99 cc. of water.

15. Iodine Test Solution.—1 gm. of iodine and 3 gm. of pot. iodide in 50 cc. of water.

16. Potassium Mercuric Iodide Test Solution (Mayer's Reagent).—1.35 gm. of mercuric chloride and 5 gm. of pot. iodide in cc. of water.

17. Phospho-Molybdic-Acid Test Solution.—Saturate sodium carbonate solution with pure molybdic acid. Add 1 part of crystallized di-sodium phosphate to 5 parts of the acid and evaporate to dryness. Fuse the residue in a porcelain crucible and dissolve the cold melt in water. Prepare 10 parts of solution of phospho-molybdic acid from 1 part of this residue.

18. Phospho-Tungstic Acid Test Solution (Scheibler's Reagent).—Add a small quantity of 20% phosphoric acid to an aqueous solution of sodium tungstate.

19.—Froehde's Reagent.—5 milligrams of molybdic acid or sodium molybdate in 1 cc. of hot con. pure sulphuric acid.

20. Formaldehyde Sulphuric Acid Test Solution.—1 gm. of mercury in 1 gm. of cold, fuming nitric acid. Dilute with twice (2) as much water and decant the clear solution after several hours.

21. Nessler's Reagent.—Dissolve 3.5 gm. of pot. iodide in 10 cc. of water, and 1.7 parts of mercuric chloride in 30 cc. of water. Add mercuric chloride solution to pot. iodide solution until there is a permanent precipitate. Dilute with 20% sodium hydroxide solution until the volume is 100 cc. Add mercuric chloride solution until there is again a permanent precipitate, and let the solution settle. Decant the clear solution and keep in small bottles.

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F.—Fluckiger's Book of Chemical Tests and Reagents.

U. S. P.—United States Pharmacopœia.

R.—Remington's Pharmacy.

W.—The Detection of Poisonous and Strong Drugs—By Wilhelm Antenrieth, translated by Warren.

P. of A. P. A.—Proceedings of the American Pharmaceutical Association.

U. S. D.—United States Dispensatory.

S. & T.—Sadtler & Trimble.

B.—Bartley's Med. Chemistry.

Rich.—Richter's Chemistry.

Casp.—Treatise on Pharmacy, Caspari.

ETHYL ALCOHOL—C_2H_5OH.
Hydrate of Ethyl.

Synonyms.—Spirits, cologne spirits, spirits of wine, rectified spirits, ethylitic spirits, grain alcohol, and ordinary alcohol.

Definition.—Alcohol (U. S. P.) is a liquid which should contain 92.3%, by weight (corresponding to about 94.9% by volume), of absolute ethyl alcohol. And should contain about 7.7%, by weight, of water..

Preparation.—Alcohol is prepared commercially in America almost exclusively by two processes, namely: (1) The fermentation of sugar; and, (2) The distillation of weak fermented liquids, which are the products of the distillation of the mash of fermented grain, and are known as "raw" or "crude" whiskeys.

Description.—A transparent, colorless, mobile liquid, of a slight agreeable odor and burning taste.

Tests.—Specific gravity, .816 at 15.6°C. or 60°F. (the standard temperature for alcohol), or .809 at 25°C. or 77°F.

The boiling point is 78°C. or 172.4°F.

Alcohol is very readily volatilized even at low temperatures. It is inflammable, burning with a pale blue flame.

Alcohol is miscible in all proportions with water, ether, and with glycerol, and with less than 75% of chloroform without any signs of cloudiness.

Alcohol is neutral to litmus paper previously moistened with water.

50 cc. of alcohol on being evaporated should leave no odor or weighable residue.

Alcohol may be detected in any liquid in quantities of 1% or more by shaking the liquid in a test tube with a small quantity of powdered guaiac resin, taken from the center of a lump. Filter the liquid and add a few drops of dil. hydrocyanic acid and a drop of a weak solution of copper sulphate. If alcohol be present, a blue color is produced, which can best be seen by holding the tube over a white paper.

Lieben's Iodoform Test.—A very delicate test for alcohol, which depends on the formation of iodoform under the influence of iodine and an alkali. To the liquid add a few cc. of an aqueous solution of iodine-potassium-iodide or a small crystal of iodine and enough potassium hydroxide to give the liquid a distinct yellow or brownish color. Warm the solution very gently. If alcohol be present, a whitish to lemon yellow precipitate of iodoform will be deposited. If the quantity of alcohol be very small the precipitate will be small, but the presence of alcohol can be detected readily by the odor of iodoform.

Note.—This test is characteristic of primary alcohols (amyl alcohol and methyl alcohol being exceptions), and secondary alcohols, as well as their derivatives: aldehydes, ethers, and ketones. (W.)

Berthelot's Test.—Vigorously agitate the liquid containing alcohol (distillate) with a few drops of benzoyl chloride and 3 to 5 drops of sodium hydroxide solution (10%), until the penetrating odor of benzoyl chloride is no longer present. The peculiar, aromatic odor of ethyl benzoate will be detected. The detection of .05 gm. of alcohol is certain by this test. (W.)

A solution containing molybdic acid in sulphuric acid when warmed with a liquid containing ethyl alcohol, ether, or aldehyde gives a blue color. This test is very delicate; it will detect .1% of ethyl alcohol or its derivatives.

Ethyl Acetate Test.—Mix the liquid containing the alcohol with the same volume of concentrated sulphuric acid. Add a very small quantity of anhydrous sodium acetate and heat. Ethyl acetate will be recognized by its aromatic odor of pears. (W.)

Alcohol is best estimated quantitatively in mixtures with water by means of its specific gravity and reference to an alcoholmetrical table, which gives the strength of alcohol contained in a liquid with a known specific gravity.

In wines, tinctures, and other alcoholic liquids, the quantity of alcohol can be estimated by placing 100 cc. of the liquid to be tested in a retort and distill until (½) one-half of the liquid distills over. The distillate is collected and water added to make up the volume to that of the original quantity taken (100 cc.). It remains then to take the specific gravity of the liquid and refer to the alcoholmetrical table for the per cent of alcohol it contains.

Note.—For an example—the original specific gravity of a sample of alcoholic liquid is .9816 at 15.6°C., after the evaporation of the alcohol and the restoration of the volume, the specific gravity is found to be 1.0063. This figure represents the solids and liquid (chiefly water) in the alcoholic liquid. Subtract the specific gravity of water, 1.000, from this; as, 1.0063—1.000=.0063, which represents the solid material and may be used as a correction factor in the original specific gravity. Subtract .0063 from original specific gravity of the liquid .9815=.9752, which specific gravity, when referred to an alcoholmetrical table, will give the per cent of alcohol the liquid contains, indicating in this case 17% by weight or 21% by volume. (Rem., p. 765).

Derivatives of Ethyl Alcohol.—Ethyl aldehyde, ether, ethyl nitrite, and paraldehyde.

Preparations Containing Alcohol or Derivatives of Alcohol.—Bitters, brandies, cordials, elixirs, essences, fluidextracts, spirits, tinctures, tonics, whiskeys, and wines.

Physiological Action of Alcohol.—In small doses alcohol acts briefly as a cerebral, cardiac, and as a general stimulant; in large doses as an anæsthetic, an intoxicant and deliriant, and finally as a narcotic, poison, and paralyzant of the nerve centers. The symptoms produced by alcohol develop in the following order: 1. Stimulant, 2. Narcotic and anodyne, 3. Anæsthetic, 4. Paralyzant.

ETHYL ALDEHYDE—C_2H_4O.

Aldehyde—acetaldehyde—acetic aldehyde, and ethylidene oxide.

Definition.—An oxidation product of ethyl alcohol. It derived its name from the first syllables of the term alcohol dehydrogenatum—aldehyde—to indicate that its formula differed from that of alcohol, in that alcohol has lost two (2) hydrogen atoms, as

$$C_2H_6O+O=C_2H_4O+H_2O.$$
(ethyl alcohol) (ethyl aldehyde)

Preparation.—Aldehyde is obtained from both the crude wood spirits and the grain spirits, but is chiefly obtained from the latter by the oxidization of ethyl alcohol with the aid of some oxidizing agent, as: sulphuric acid, pot. dichromate, or manganese dioxide.

Description.—It is a colorless, mobile, transparent liquid having an acrid, suffocating odor, and the vapors are irritable to the eyes.

Tests.—Soluble in all proportions with alcohol, ether, and water.

Boiling Point.—21°C. or 69.8°F.

If mixed with a solution of ammonium silver nitrate and warmed, the silver is reduced and deposited upon the glass in the form of a metallic mirror.

It gives the characteristic test or general reaction of the aldehydes, which is as follows:

General Test for Aldehydes.—They all have the property of restoring the red color of a solution of fuchsin salt which has been decolorized by sulphurous acid (H_2SO_3).

If 10 cc. of ethyl aldehdye be mixed with 5 cc. of pot. hydroxide test solution in a test tube, the mixture at once assumes a brown or yellowish color.

Ethyl aldehyde acts as a strong reducing agent. When pure aldehyde is left for some time in contact with hydrochloric acid, sulphur dioxide, carbonyl chloride, or zinc chloride, it undergoes a change.—polymerization takes place with the formation of two compounds: paraldehyde and metaldehyde.

Physiological Action.—The vapors of aldehyde when inhaled produce asphyxia. When the liquid is taken internally it produces a state of intoxication, and is a powerful depressant of the respiration. It is an antiseptic and local irritant externally

ETHER.

Synonyms.—Ethyl ether, ethyl oxide, ether and sulphuric ether.

Definition.—Chemically, ether is the oxide of the hydrocarbon radical. It is a liquid composed of about 96%, by weight, of absolute ethyl oxide, and about 4% of alcohol containing a little water.

Description.—A transparent, very volatile, highly refracting, colorless liquid, possessing a characteristic odor and a sweetish burning taste.

Preparation.—Prepared by the action of alcohol on sulphuric acid (H_2SO_4). The sulphuric acid is not consumed in the process, but is regenerated on the addition of alcohol, thus making it a continuous process. Alcohol yields ether by the extraction of one (1) molecule of water, and upon this the method is based. The sulphuric acid extracts one molecule of water with the formation of the intermediate product—ethyl sulphuric acid, which is converted into ether and sulphuric acid by the addition of alcohol.

Tests.—Solubility: In water at 25°C. or 77°F. in the ratio of 1:10 with a slight contraction in volume. Soluble in all proportions in alcohol, chloroform, petroleum, benzine, benzene, and fixed and volatile oils.

Specific Gravity.—0.716 to 0.717 at 25°C. or 77°F.

Boiling Point.—35.5°C. or 96°F.

Tests.—Ether should not impart a red color to blue litmus paper moistened with water, when it is immersed in it for ten minutes.

Ether should boil when a test tube half filled with it, and con-

taining a few pieces of broken glass, is held, tightly clasped, in the hand for some time.

Ether is very volatile and inflammable. The vapors of ether mixed with air explode with violence when ignited.

Ether gives no color when shaken with pot. hydroxide solution (KOH).

Physiological Action.—Anæsthetic by inhalation; anodyne, anthelmintic, antispasmodic, diaphoretic, cardiac and cerebral stimulant. Externally: a powerful refrigerant and local anæsthetic, also a rubifacient when rubbed into the skin. Taken internally in small doses it is a powerful stimulant to the secretions and also to the vaso-motor and cardiac systems, and raises the blood pressure. In large doses it acts as a paralyzant to the nerve centers.

Dose.—By mouth, 10-60 min.; hypodermically, 15-30 min.

ETHER ACETICUS—$C_2H_5C_2H_3O_2$.
Ethyl Acetate or Acetic Ether.

Definition.—A liquid composed of about 90%, by weight, of ethyl acetate, and about 10% of ethyl alcohol containing a little water. Chemically ethyl acetate is an ester, or etherial salt of ethyl alcohol.

Preparation.—By the decomposition of ethyl sulphuric acid, which is formed as an intermediate product by the action of sulphuric acid upon ethyl alcohol, with sodium acetate.

Description.—A transparent, colorless liquid, of a fragrant and refreshing odor, and having a peculiar, acetous, burning taste.

Tests.—Solubility: In water at 25°C. or 77°F., 1:7 parts.

Miscible in all proportions with ethyl and methyl alcohol, ether, and fixed and volatile oils.

Specific Gravity.—0.883 to 0.885 at 25°C. or 77°F.

Boiling Point.—72°C. or 161.6°F.

Acetic ether is highly inflammable, burning with a bluish yellow flame, and giving an acetous odor.

Reaction.—It should not immediately redden blue litmus paper.

Upon evaporation it should leave no residue. It is very volatile even at low temperatures. Ethyl acetate can best be detected by its boiling point, which is constant.

Physiological Action.—Anæsthetic, stimulant, and antispasmodic administered in combination with carminatives.

Dose.—15 min. or 1 cc.

ÆTHER NITROSUS—C_2H_5ONO.
Ethyl Nitrite or Nitrous Ether.

Definition.—An ester formed by the substitution of the nitrous acid radical for the hydrogen of the hydroxyl of ethyl alcohol.

Preparation.—By the action of sulphuric acid on sodium nitrite in the presence of alcohol.

Description.—Ethyl nitrite is a thin, mobile, pale yellow liquid, having a pungent ethereal, apple-like odor.

Tests.—Solubility: In water, at 25° C. or 77°F., 1:48 parts; in alcohol, in all proportions.

Specific Gravity.—0.900 at 15°C. or 60°F.

Boiling Point.—16°C. or 60.8°F.

The density of ethyl nitrite is 2.627 compared with air.

Reaction.—It has no effect on litmus when fresh. But on long keeping it acquires an acid reaction with the liberation of nitric oxide.

Ethyl nitrite is very volatile and inflammable, burning with a white flame.

Mixed with an alcoholic solution of potassium hydroxide it becomes dark brown in color, showing the presence of aldehyde.

Note.—On exposure to air it becomes acid, due to the absorption of oxygen by the aldehyde, which is converted into acetic acid.

Physiological Action.—Nitrous ether is a mild diaphoretic, diffusible stimulant, carminative, and efficient diuretic. It diminishes oxygenation of the blood, relaxing the peripheral vessels, accelerating the heart's action, and thus lowering arterial tension.

PARALDEHYDE—$C_6H_{12}O_3$ or (C_2H_4O3).

Definition.—A polymer of acetaldehyde—C_2H_4O.

Description.—A colorless, transparent liquid of a somewhat ethereal odor and a sharp pungent taste.

Preparation.—Is a product of the condensation of three molecules of ethyl, or ordinary aldehyde by the action of hydrochloric acid, sulphur dioxide, carbonyl chloride, or zinc chloride on aldehyde; almost complete conversion into paraldehyde takes place, and the liquid is purified by freezing and rectifying.

Tests.—Solubility: In water at 25°C. or 77°F., 1:8 parts; in boiling water, 1:16.5 parts. It dissolves in all proportions in alcohol, chloroform, ether, liquid paraffin, fixed oils, benzene, volatile oils, and carbon disulphide.

Specific Gravity.—0.990 at 25°C. or 77°F.

Boiling Point.—124°C. or 252.2°F., evolving inflammable vapors.

Is solid and crystalline at 10°C. or 50°F. and liquefies again at 15°C. or 60°F.

Paraldehyde is neutral or slightly acid to litmus. The cold aqueous solution becomes turbid on heating.

Paraldehyde should give no coloration after two (2) hours standing with a normal solution of pot. hydroxide (KOH) or sodium hydroxide (NaOH).

It mixes with nitric acid (HNO_3) without decomposition.

Sulphuric acid (C. P.) gives a brown color with paraldehyde after standing a few minutes.

A greenish yellow color, soon changing to a brown, and then black, takes place when a few drops of sulphuric acid (H_2SO_4) concentrated, is added to one (1) drop of paraldehyde on a porcelain lid. When larger amounts of sulphuric acid and paraldehyde are used, a violent action takes place.

Paraldehyde does not *immediately* reduce silver from a solution of silver nitrate ($AgNO_3$), either in the cold or by heating.

Physiological Action.—The hypnotic action is not as persistent as that of chloral hydrate and requires more frequent repetition to produce sustained sleep and is unquestionably safer than chloral, strengthening and slowing the heart's action instead of weakening it. It does not impair digestion, but may give rise to cerebral congestion and vaso-motor paralysis if used for a long period.

Hypnotic, sedative, antispasmotic, and diuretic.

Dose.—30 to 60 min.

A toxic dose of paraldehyde paralyzes the medula and the respiratory center therein.

Cases of paraldehyde habit exhibit a train of symptoms similar to those observed in delirium tremens.

OPIUM.

Definition.—The concrete milky exudation obtained from the unripe capsule of papaver somniferum, which yields in its normal moist condition not less than 9% of crystallizable morphine, when assayed by the official process.

Description.—In irregular, flattened masses of variable sizes. Externally, grayish brown, plastic when fresh, but becoming hard by age; internally, dark brown, somewhat lustrous; odor, strong and narcotic; taste, bitter and characteristic.

Tests.—Note: Detection of the different alkaloids of opium, morphine, codeine, narcotine, and others, in a liquid, or other preparations suspected of containing opium affords partial evidence of the presence of opium, but these are not positive tests of its presence. Moreover, opium contains two non-basic substances: meconic acid and meconine. The detection of these two compounds associated with morphine and narcotine definitely determines the presence of opium.

Test No. 1 for Meconic Acid.—A solution of a ferric salt imparts to a solution of meconic acid a dark red color.

Test No. 2 for Meconic Acid.—Extract a portion of the original material with alcohol, containing a few drops of hydrochloric acid. Filter and evaporate the filtrate. Dissolve the residue in a small amount of water and boil the solution with an excess of calcined magnesium oxide. The solution will contain magnesium meconate. Filter off the residue of undissolved magnesium oxide, and acidify the filtrate faintly with dilute hydrochloric acid. Add a few drops of ferric chloride test solution. A brownish red to a black red color

indicates meconic acid. This red color will not disappear when the solution is warmed with concentrated hydrochloric acid. In this respect it differs from the red color caused by acetic acid. (W.) Nor is it readily discharged by a solution of $HgCl_2$ (distinction from sulphocyanic acid).

Note.—By this test meconic acid can be distinctly recognized in an extract obtained from 0.005 gm. of opium.

Test for Meconine.—Extract the original material with alcohol containing a little sulphuric acid (few drops). Filter and evaporate the filtrate to a syrup. Dissolve the residue in a large quantity of water, and extract meconine from the acid solution with benzine. Upon evaporating the solvent meconine is frequently obtained in crystals. Meconine may be recognized by dissolving it in a small quantity of con. sulphuric acid. The solution will have a green color which will change to a red within two days.

Color Tests for the Alkaloids of Opium.—The color tests for the alkaloids of opium with selenous acid are so distinct that this reagent should be an excellent means of detecting the presence of opium.

Selenous Acid with Morphine.—When a cold solution of selenous acid is added to morphine it gives a play of colors; at first an evanescent blue, then intense blue-green, and from that to a persistent olive-green color. In hot solutions of selenous acid morphine gives a brown color. In hot solutions of selenous acid morphine gives a brown color. (W.)

Codeine with cold solutions of selenous acid gives first a blue color, quickly changing to an emerald green, and later to a persistent olive green; while in hot solutions it gives first a steel blue, then brown. (W.)

Narceine gives with cold solutions of selenous acid first a faint greenish-yellow color, then violet; in hot solutions dark violet. (W.)

Narcotine with cold solutions of selenous acid gives a greenish steel blue, later cherry red. (W.)

Preparations of Opium.—Extracts, denarcotized opium, granulated opium, bougies, brown mixture, carminative mixtures, crayons, papers, powders, elixirs, liniments, ointments, paregoric, pills, plasters, syrups, suppositories, tablets, tinctures, troches, vinegars, and wines.

Derivatives.—Codeine (alkaloid), hydrochloride, phosphate, sulphate, and other salts of codeine.

Preparations containing codeine or any of its salts.—Elixirs, pills, syrups, and tablets.

Physiological Action of Opium.—Analgesic, hypnotic, antispasmodic, diaphoretic, and narcotic. It first stimulates, and afterwards depresses the cerebral, cardiac, and respiratory centers.

MORPHINE (ALKALOID)—$C_{17}H_{19}NO_3.H_2O$.

Definition.—An alkaloid obtained from opium, where it exists to the extent of 9% of crystallizable morphine in the form of morphine meconate.

Description.—Colorless or white, shining, rhombic prisms, or in the form of needle shaped crystals or a crystalline powder. It is odorless and has a bitter taste.

Tests.—Solubility:

In water at	15°C. or 60°F.,	1:5500	parts
In water at	25°C. or 77°F.,	1:3300	parts
In water at	80°C. or 176°F.,	1:1080	parts
In water at	100°C. or 212°F.,	1: 500	parts
In alcohol at	25°C. or 77°F.,	1: 168.6	parts
In alcohol at	60°C. or 140°F.,	1: 76	parts
In lime water at	25°C. or 77°F.,	1: 100	parts
In ether at	25°C. or 77°F.,	1:4464	parts
In chloroform at	25°C. or 77°F.,	1:1800	parts
In amyl alcohol at	25°C. or 77°F.,	1: 113.5	parts
In acetic ether at	25°C. or 77°F.,	1: 525	parts

It is also soluble in methyl alcohol and acetone; it is sparingly soluble in solutions of sodium and potassium hydroxide, ammonia water (10%), and baryta water. It is insoluble in benzene and in carbon disulphide.

Its solutions in lime and baryta water are decomposed by the influence of light and air, metallic morphinates being formed which precipitate out, and the liquid gradually assumes a dark color, due to the formation of these insoluble salts.

Neither crystallized morphine, nor the alkaloid which has become crystalline, is soluble in ether or benzene. These solvents will, however, dissolve small quantities of the freshly precipitated and amorphous alkaloid. Amyl alcohol, chloroform, and acetic ether dissolve more easily the amorphous than the crystallized alkaloid.

Aqueous solutions of morphine have alkaline reaction to red litmus. (R.)

Morphine, when heated to about 225°C. or 437°F., melts, forming purple liquid, changing to a dark brown and finally to a black. Upon ignition it is slowly consumed without leaving a residue. (R.)

Concentrated Nitric Acid Test.—Concentrated nitric acid dissolves morphine with a blood red color. This color gradually changes to yellow. This test is also characteristic of brucine. But on the addition of stannous chloride test solution to brucine an intense violet color will appear, a distinguishing test between morphine and brucine. Nitric acid also gives this red color test with aqueous solutions of the salts of morphine.

Sulphuric acid in which a small crystal of potassium iodate has

been dissolved gives with morphine a dark brown color. Concentrated sulphuric dissolves morphine without color.

Mercuric potassium iodide test solution, when added to a solution of morphine, produces a white gelatinous precipitate. (R.)

If a solution of sodium phospho-molybdate (5% in water) be added to a solution of morphine, a yellow precipitate is produced, soluble in ammonia water.

Prussian Blue Test.—Solutions of morphine, when heated with an aqueous solution of potassium ferrocyanide (10% in water) containing a drop of neutral ferric chloride solution, gives a deep blue solution, from which separates a blue precipitate of "Prussian Blue" after standing for a short time, if the morphine is present in large enough amounts. The ferrocyanide mixture should be freshly prepared when used for this test.

Ferric Chloride Test.—Add one or two (1 or 2) drops of neutral ferric chloride test solution to a neutral solution of a morphine salt. A beautiful blue color will appear. (Ferric chloride solution may be made neutral by the addition of a few drops of potassium carbonate solution).

Silver Test.—On warming a solution of a morphine salt with a solution of silver nitrate and an excess of ammonium hydroxide solution, morphine precipitates metallic silver in the form of a gray powder. (W.)

Froehde's Test.—(5% of molybdic acid or sodium molybdate in concentrated sulphuric acid). This reagent dissolves morphine and its salts with a beautiful, violet color. This color gradually passes through blue to a dirty green and finally to a faint red. The addition of water immediately destroys these colors. (W.)

Formaldehyde Sulphuric Acid Test.—(3 drops of formaldehyde in 3 cc. of concentrated sulphuric acid). If a few drops of this reagent be mixed with a trace of morphine, it will produce a purple red color which will change to violet, blue violet, and finally become blue. (The formaldehyde sulphuric acid reagent should be freshly prepared). (W.)

Husemann's Test.—Morphine dissolved in a few cc. of concentrated sulphuric acid and heated for a few minutes on a water bath or over a very small flame until fumes arise, a reddish to brown color will appear. Cool and add one or two drops of concentrated nitric acid, a reddish violet color will appear and soon change to blood-red or yellowish-red. (W.)

Crystals of morphine become bright red in color when strewn on concentrated nitric acid or heated on nitric acid previously diluted with twice its volume of water. (F.)

Morphine dissolves in a mixture of .02 gm. of potassium dichromate with 10 cc. of water and 30 cc. of concentrated sulphuric acid, giving a green color. (F.)

.05 gm. of morphine (in crystals) dissolved in 50 cc. of lime water is colored a bright red on the addition of chlorine water. (F.)

When .02 gm. each of morphine and sodium nitrite and .04 gm. mercuric chloride are warmed and frequently stirred on a water bath with 6 cc. of water a bright blue fluid is obtained. After standing, a dark blue crystalline precipitate settles out, which turns brown, if allowed to stand for a day or two. (F.)

Sulphuric acid containing a trace of selenous acid gives with morphine a blue color, changing to green and then to brown.

Iodine-potassium iodide, phospho-tungstic acid, potassium mercuric iodide, potassium bismuthous iodide, and phospho-molybdic acid test solutions, all give characteristic color or precipitates, by reactions with morphine.

Qualitative Assays.—A short qualitative assay process for morphine in tinctures, fluid extracts, or other alcoholic liquids is made by evaporating 5 cc. of the given fluid to dryness with 1 gm. of calcined magnesia. Pulverize the residue and boil with 10 cc. of acetone; filter; add a few cc. of water and a few drops of acetic acid to the filtrate; evaporate to a minimum, and filter again; evaporate the filtrate to dryness and apply the preceding tests for morphine.

A very practical assay for morphine in aqueous liquids or solutions.—Make the liquid or solution alkaline with ammonia water and then extract with hot chloroform added in large quantities. Withdraw the chloroform from the liquid by means of a separatory funnel. Repeat the extraction several times (three or four) with fresh portions of hot chloroform added in large quantities, for the free base is only slightly soluble in chloroform. Pour the combined extracts obtained into a dry flask, and add a few crystals of dessicated sodium chloride to remove any adherent water. Pass the chloroform extract through a dry filter paper, and after filtering, evaporate off the chloroform by allowing it to drop into a small glass dish placed over a water bath. After all the chloroform has been evaporated, test the residue by the preceding tests given under morphine.

Note.—The first chloroform extract usually does not give as pure morphine as the succeeding portions, therefore it is advisable to collect the latter portions separately.

Morphine can be extracted by hot chloroform, amyl alcohol, and acetic ether only from solutions containing free ammonia; free alkalies must not be present, as sodium or potassium hydroxide.

Morphine is a tertiary base and at the same time a monacid phenol. It is the presence of the phenolic (OH) group which renders it soluble in alkalies. Morphine, moreover, contains an alcoholic group. Morphine is very easily oxidized. Even atmospheric oxygen, as well as potassium permanganate, potassium ferricyanide, ammoniacal copper solutions will oxidize the alkaloid in alkaline solutions

and convert it into a non-toxic substance, soluble in alkalies. This oxidation product is oxy-di-morphine or pseudomorphine.

Reaction: $2(C_{17}H_{19}NO_3)+O=(C_{17}H_{18}NO_3)_2+H_2O$. (W.)
(morphine) (pseudomorphine)

Morphine acts as a strong reducing agent, because of the ease with which it is oxidized. Morphine will reduce silver and gold chloride even in the cold.

The constitution of morphine has been determined with considerable certainty, and it is essentially the same as that of codeine, which is mono-methyl-morphine. Both morphine and codeine are nitro derivatives of a tetrahydro-phenanthrene.

Derivatives of Morphine.—Apomorphine, dionine, perxonine, morphine acetate, hydrochloride, sulphate, and other salts of morphine.

Preparations likely to contain Morphine or Derivatives of Morphine.—Bougies, catarrh snuff, chlorodyne, compound powder of morphine, crayons, elixirs, granules, pills, solutions, syrups, suppositories, tablets, triturates and troches.

Physiological Action of Morphine.—Morphine has a similar action to that of opium. As compared with opium morphine acts more quickly and for a shorter time. It has less influence on the intestines and the skin, is less stimulating, less convulsent, and less diaphoretic, but more sedative, more anodyne, and hypnotic.

Dose.—$\frac{1}{8}$ to $\frac{1}{4}$ gr. (.008 to .015 gm.).

Selenous Acid Color Test.—When a cold solution of selenous acid is added to morphine, it gives a play of colors; first, an evanescent blue; then an intense blue-green to a persistent olive-green; hot solutions, a brown color.

CODEINE.

Chemical formula: $C_{18}H_{21}NO_3+H_2O$ or $C_{17}H_{17}OCH_3(OH)NO+H_2O$.

Definition.—An alkaloid obtained from opium, where it exists to the extent of 1% to 2%, or prepared from morphine by methylation. Chemically, codeine is the methyl ether of morphine—a substituted morphine in which one of the hydroxyl groups is replaced by a methoxyl group (OCH_3).

Description.—Colorless, transparent octahedrons or a white crystalline powder, odorless, having a slightly bitter taste, slightly effervescent in warm air.

Tests.—Solubility:

In water at	15°C. or 60°F.,	1:90	parts
In water at	25°C. or 77°F.,	1:88	parts
In water at	80°C. or 176°F.,	1:59	parts
In water at	100°C. or 212°F.,	1:15	parts
In acohol at	25°C. or 77°F.,	1:1.6	parts
In alcohol at	60°C. or 140°F.,	1:0.92	parts
In chloroform at	25°C. or 77°F.,	1:0.66	parts
In ether at	25°C. or 77°F.,	1:12.5	parts

It is slightly soluble in ammonia water, easily soluble in carbon disulphide, benzene, and amyl alcohol. It is insoluble in petroleum ether.

Melting Point.—100°C. or 212°F.

It leaves no residue on incineration. When heated to a high temperature it assumes a dark green color, changing to brown.

Its aqueous solution is slightly alkaline to red litmus, and is levogyrate.

A saturated aqueous solution of iodine and bromine (1:80) causes a turbidity in an aqueous solution of codeine, which soon clears up, but reappearing on the addition of more of the reagent. (F.)

Alkaloidal Test.—Mercuric pot. iodide solution, N/10; mercuric chloride solution, 5%; mercuric bromide solution, 0.5%; saturated solution of picric acid; and an aqueous solution of tannic acid, 5%, give heavy precipitates with saturated solution of codeine. (F.)

Codeine is not precipitated by an alum solution, notwithstanding its alkaline reaction, nor is it precipitated in solutions of magnesium or copper salts. But a saturated aqueous solution of codeine is precipitated by 5% solutions of zinc sulphate, ferrous sulphate, or magnesium sulphate. (F.)

Upon the addition of a sufficient quantity of codeine ferric hydroxide is precipitated from a ferric chloride solution, if the solution is warmed on a water bath. A part of the ferric compound is reduced to a ferrous salt, as is shown by the precipitation of Prussian Blue on the addition of a freshly prepared (5%) solution of pot. ferricyanide to the filtrate. (F.)

Codeine assumes a brown color when treated with a mixture of pot. ferricyanide and ferric chloride test solution (.037 gm. of pot. ferricyanide dissolved in 100 cc. of water to which is added .5 cc. of 33 1-3% ferric chloride test solution. After standing for some time the fluid turns a dirty green color. (F.)

.05 gm. of codeine is colored red when strewn upon 2 cc. of nitric acid; the acid is colored yellow. (F.)

Sulphuric acid (free from nitrous compounds) dissolves codeine without color or not more than a slight pinkish tint after heating for five (5) minutes on a water bath. (The test tube must have been previously rinsed with the acid for this reaction.) This acid solution turns successively green, blue, and then violet when one (1) drop of ferric chloride test solution (10%) diluted twenty times with water, is added. Water or alcohol discolors the solution, while it is unaffected by chloroform. (F.)

Sulphuric acid in which a few crystals of codeine have been dissolved becomes green, changing to dark violet when one (1) drop of nitric acid (HNO_3) is added. (F.)

A mixture of codeine and sodium nitrate when strewn on sulphuric acid gives a dark brown color, changing to green and finally to reddish brown. (F.)

Codeine remains colorless when agitated with weak chlorine water (half strength of a saturated solution); strong chlorine water gives a red color, especially when ammonia water (10%) is added. (F.)

Codeine warmed with dilute sulphuric acid becomes pink. (F.)

Codeine leaves a dark brick-red mass when a crystal is dissolved in nitric acid; the solution being evaporated to dryness and a little of a 10% solution of pot. hydroxide (KOH) in absolute alcohol added. (F.)

Sulphuric acid containing a trace (a few drops) of formaldehyde gives with codeine a violet blue color. (F.)

Phospho-molybdic acid and potassium bismuthous iodide give precipitates with very dilute solutions of codeine.

Oxidation Test.—A few drops of sulphuric acid are added to a crystal of codeine on a watch glass. Then finely powdered pot. arsenate (KH_2AsO_4) is added and the whole gently warmed over a small flame. The acid will have a deep blue or violet color. An excess of potassium arsenate has no effect on the test. If water or sodium hydroxide solution be added, the blue color will change to orange yellow. (W.)

Froehde's Test.—Froehde's reagent (.005 gm. of molybdic acid or sodium molybdate in one cc. of hot concentrated sulphuric acid) dissolves codeine with a yellowish color which soon changes to green and later to blue. Gentle warming will hasten this change of color. (W.)

Furfurol Test.—Dissolve codeine in a few drops of concentrated sulphuric acid, and warm very gently with a drop of 10% solution of cane sugar. This will produce a purple red color. Excess of sugar interferes with the test. This test may also be made by mixing a drop of the cane sugar solution with codeine dissolved in about five (5) drops of a 50%-60% aqueous solution of chloral hydrate, and then adding concentrated sulphuric acid, which will form an under layer. A carmine red ring will appear at the zone of contact. If the sulphuric acid and chloral hydrate solution be thoroughly mixed, the entire liquid will be red; after a time the shade of color will be more of a reddish brown.

Codeine is closely allied to morphine as shown by the formula—$C_{17}H_{18}(CH_3)NO_3$, which differs from that of morphine by one methyl group. Hence it may be correctly called methyl morphine. Codeine, like morphine, yields apomorphine when heated with hydrochloric acid. Codeine crystallizes from an aqueous solution with one molecule of water, corresponding to 5.67%, which constitutes the official product. Codeine crystallizes in the largest crystals, has the largest dose, and is the most soluble of all the alkaloids of opium.

Selenous Acid Color Test.—Codeine with a cold solution of selenous acid gives first a blue color, quickly changing to emerald green, and later to a persistent olive green; in hot solutions, steel-blue, then brown.

Physiological Action and Uses.—Codeine possesses motor paralyzant power, like all other methyl compounds. It has little hypnotic effect. It has a special sedative action on the pneumogastric nerve, contracts the pupil of the eye and is a remarkable analgesic to the abdominal and pelvic viscera.

Dose.—¼ to 1 gr. or .015 to .065 gm.).

APOMORPHINE—$C_{17}H_{17}NO_2$.

Apomorphine may be classed as one of the so-called artificial alkaloids. Hydrochloric, phosphoric, and oxalic acids, the alkalies, and zinc chloride react on morphine with the liberation of one molecule of water and the subsequent formation of apomorphine. Apomorphine generally occurs in the form of the hydrochloride, which is the only official salt of apomorphine.

Description.—A gray or grayish white glistening powder or crystal, odorless, of slightly bitter taste, and neutral reaction to moist litmus paper.

Solubility.—Apomorphine is freely soluble in ethyl and methyl alcohol, ether, and chloroform. The moist or dissolved alkaloid is very susceptible to oxidation, and soon turns green. This green oxidation product is soluble in ether, benzene, and chloroform with a red or violet color.

Apomorphine gives directly those tests described under morphine, which depend upon the conversion of morphine into apomorphine. This alkaloid, like morphine, reduces iodic acid solutions.

Tests.—Husemann's Test: Dissolve apomorphine in concentrated sulphuric acid and add a drop of concentrated nitric acid. An evanescent violet color will appear, which soon changes to blood red, and later to a yellowish red color.

Pellagris Test.—Dissolve apomorphine in dilute hydrochloric or sulphuric acid, and first neutralize the solution with acid sodium carbonate, then add one to four drops of an alcoholic solution of iodine, and shake thoroughly for several minutes. The solution will have a blue-green or emerald green color. Extract with ether and the solvent will have a violet color.

Froehde's Test.—Froehde's reagent dissolves pure apomorphine with a green color. When the alkaloid has been acted upon by air to any extent, the color will be violet.

The physiological action and dose are the same as those of the hydrochloride.

APOMORPHINE HYDROCHLORIDUM—$C_{17}H_{17}NO_2.HCl$.
Apomorphine Hydrochloride or Hydrochlorate.

Definition.—The salt of an artificial alkaloid prepared from morphine by the abstraction of one molecule of water.

Hydrochloric, phosphoric, and oxalic acids, the alkalies, and zinc

chloride react on morphine with the liberation of one molecule of water, and the subsequent formation of apomorphine, and this is converted into the hydrochloride by the action of hydrochloric acid.

Description.—When pure, it is in the form of white, shining crystals, but is generally seen in the form of a grayish-green powder, odorless and of a slightly bitter taste.

Tests.—Solubility:

In water at	25°C.	or 77°F.,	1: 40 parts
In water at	80°C.	or 176°F.,	1: 16 parts
In alcohol at	25°C.	or 77°F.,	1: 38 parts
In alcohol at	60°C.	or 140°F.,	1: 30 parts
In ether at	25°C.	or 77°F.,	1:1864 parts
In chloroform at	25°C.	or 77°F.,	1:3800 parts

The aqueous solution is neutral to litmus paper, and is colorless, but on exposure to air and light it gradually becomes green; more slowly if the solution is made acid. Ether removes the alkaloid from the green colored aqueous solution, giving to it a purple-red color; chloroform, with a beautiful blue color. (F.)

A saturated solution of iodine, mercuric potassium iodide test solution, mercuric chloride solution (5%), mercuric bromide solution (.5%), and solutions of sodium chloride, potassium bromide, potassium (in N/10 solutions in water) produce precipitates with an aqueous solution of apomorphine hydrochloride, all of which turn green by oxidation.

Ammonia water (10%) dissolves apomorphine hydrochl. with a brown color which turns reddish. (F.)

It dissolves in lime water imparting to the liquid a green color, afterwards changing to a red or brown color. Very soon a greenish-brown settles out. (F.)

The colorless aqueous solution turns green when shaken with peroxide of manganese; red, when peroxide of lead is used. In the latter case, however, the fluid turns green also.

It dissolves in a saturated aqueous solution of iodine with a red color, also changing to green.

Barium peroxide imparts a green color to the aqueous solution, changing to pink-red and then to a brown color.

Carbon disulphide, ether, and benzene produce with all the above named green fluids a red color. With chloroform a distinct constant blue color is obtained. All these red and blue colors are constant.

.005 gm. of apomorphine hydrochloride dissolves in 2 cc. of acetic acid without color, but turns blood red on the addition of a crystal of potassium iodate, and shaking. Ether and chloroform change this blood red color to an indigo blue color, and carbon disulphide liberates iodine with its usual amethyst color.

A blue liquid is obtained in less than an hour by agitating .05 gm.

of apomorphine hydrochloride with .05 gm. of ferrous sulphate in ten cc. of water; after standing about twenty-four hours the apomorphine hydrochloride oxidizes; the liquid changing to blue-black color, and finally to a dirty green color. The blue color can be diluted with alcohol, but ether, benzene, chloroform, and carbon disulphide remain colorless when agitated with the liquid. This test is characteristic of apomorphine, not effecting codeine, morphine, narceine, or narcotine.

.001 gm. of apomorphine hydrochloride produces a mirror from reduced silver in .5 cc. of a N/10 silver solution, in from eight to twelve hours; more quickly if ammonia water is added. (F.)

Dissolve .75 gm. of potassium ferricyanide in 200 cc. of water; add 1 cc. of ferric chloride solution (free from hydrochloric acid). When a drop of this mixture is added to a few crystals of apomorphine hydrochloride (on a clean porcelain lid of a crucible), a precipitate of Prussian Blue is formed immediately. (F.)

Apomorphine hydrochloride dissolves in sulphuric acid without color; when treated with nitric acid a deep purple color fading to orange is produced; with sulphuric acid containing a trace of selenous acid, a dark blue color, fading to violet, and then turning black; with sulphuric acid containing a trace of nitric acid, a blood red color, fading to orange; with sulphuric acid containing a trace of ferric chloride, a pale blue color; with sulphuric acid containing a trace of ammonium vanadate, a violet blue coolr, changing to deep greenish blue; with sulphuric acid containing a trace of paraldehyde, a greenish color, changing to reddish brown; with sulphuric acid containing potassium iodate, a black color, fading to brown, and finally to pale brown. (R.)

Gold chloride produces a reddish purple precipitate with a solution of the salt.

Diluted ferric chloride test solution colors apomorphine hydrochloride red.

Silver nitrate test solution added to the aqueous solution of the salt throws down a white precipitate, insoluble in nitric acid, soon turning black by reduction to metallic silver, and instantly reduced by the addition of ammonia water.

Selenous Acid Color Test.—Apomorphine with cold solution of selenous acid gives a dark blue violet color; in hot solution a dark brown color.

Physiological Action and Uses.—Apomorphine though a derivative of morphine has no narcotic properties. Administered by the mouth in 1/30 to 1/20 gr. doses it is a valuable expectorant; and given hypodermically in 1/10 gr. doses, it is a powerful emetic. It may be given in combination with morphine to great advantage. The two drugs do not destroy each other's action, but from the combination we get increased secretions from the mucous membranes with dimin-

ished irritability of the respiratory centers, and consequently lessened cough.

DIONINE.

Definition.—Dionine is the hydrochloride of the mono-ethyl ester of morphine.

Description.—It is a white crystalline powder.

Solubility.—Soluble in water; insoluble in alcohol, ether, benzene, and chloroform.

Physiological Action.—It possesses some of the narcotic properties of morphine without its intensity. It is employed in phthisis, bronchial affections, and pneumonia.

Dose.—1/3 to 1 gr. or .022 to .065 gm.

PERONINE—BENZYL MORPHINE.

Definition.—Peronine is the hydrochloride of the benzyl ether of morphine.

Description.—White powder or white feathery needle shaped crystals.

Solubility.—Soluble in water; insoluble in alcohol, ether, benzene, and chloroform.

Test.—Decomposes when heated to 200°C.

Physiological Action.—Hypnotic and sedative. It produces sound sleep without previous excitement, also useful in allaying cough, and in relieving rheumatic and neuralgic pains.

MORPHINÆ ACETAS—$C_{17}H_{19}NO_3.C_2H_4O\ 3H_2O$.
Morphine Acetate.

Definition.—The acetate of the alkaloid morphine, obtained from opium.

Preparation.—By the action of acetic acid on morphine.

Description.—A white or yellowish white amorphous powder. It never occurs in commerce in the crystalline form, but always in the amorphous condition. It has an acetous odor and taste.

Tests.—Solubility:

In water at	15° C.	or 60° F.,	1:2.5 parts
In water at	25° C.	or 77° F.,	1:2.2 parts
In water at	80° C.	or 176° F.,	1:2 parts
In alcohol at	25° C.	or 77° F.,	1:21.6 parts
In alcohol at	60° C.	or 140° F.,	1:2.5 parts
In chloroform at	25° C.	or 77° F.,	1:480 parts
In glycerine at	25° C.	or 77° F.,	1:5.2 parts

Insoluble in ether and benzene.

When heated the salt loses its water of crystallization and acetic acid, and melts at 200° C. or 392° F.

When ignited it is consumed, leaving no residue.

On adding concentrated sulphuric acid to morphine acetate, vapors of acetic acid are evolved which can readily be detected by their odor.

Ammonia water (10%) when added in slight excess to an aqueous solution of morphine acetate, gives a white precipitate, which, collected and washed, should conform to the test and reactions given under morphine.

Morphine acetate is easily decomposed by heat, or exposure to air, acetic acid being liberated which renders it less soluble; and to this decomposition the turbidity of solutions of the salt is due. In such cases a few drops of acetic acid added will render it soluble and give a clear solution.

The physiological action, uses, and dose are the same as that of morphine.

MORPHINÆ HYDROCHLORIDUM—$C_{17}H_{19}NO_3HCl\ 3H_2O$.
Morphine Hydrochloride or hydrochlorate.

Definition.—The hydrochloride of the alkaloid, morphine, obtained from opium.

Preparation.—By the action of hydrochloric acid on the alkaloid morphine a solution of the salt is obtained, which, upon concentration, yields well-defined crystals, containing 14.38% of water of crystallization.

Description.—White, feathery, or silky needle shaped crystals or microcrystalline cubes, or a white bulky powder; odorless, having a bitter taste.

Tests.—Solubility:

In water at	15°C. or	60°F.,	1:25 parts
In water at	25°C. or	77°F.,	1:17.2 parts
In water at	80°C. or	176°F.,	1: .5 parts
In alcohol at	25°C. or	77°F.,	1:42 parts
In alcohol at	60°C. or	140°F.,	1:35.5 parts

Insoluble in ether and chloroform at ordinary temperatures.

Its solutions are neutral to litmus (alcoholic and aqueous).

The bitter taste of morphine hydrochloride is noticeable in solutions of 1:200,000. (F.)

On heating to 250°C. it assumes a brown color, and on higher heating chars without melting. (R.)

Silver nitrate test solution produces a white precipitate, insoluble in nitric acid. (R.)

Ferric chloride test solution produces, in neutral aqueous solutions of the salt, a blue color, which is destroyed by acids, alcohol, or by heating.

Morphine tannate is so soluble in water, that even a saturated solution of morphine hydrochloride remains unchanged when tannic acid is added. The tannate is precipitated, however, if a piece of

chalk is added to a mixture of two cc. of a saturated solution of the salt and one cc. of tannic acid solution.

Two (2) cc. of chlorine water (saturated) causes a yellow color 1 cc. of an aqueous saturated solution of morphine hydrochloride, which changes to brown, on the addition of one (1) cc. of ammonia water (10%).

On shaking an aqueous solution of the salt with ammonia water (10%) in slight excess, a crystalline precipitate is formed which, when collected and washed, should respond to all the tests and reactions given under morphine.

Physiological Actions and Uses.—The action and uses of morphine hydrochloride are the same as that of the alkaloid (morphine).

Dose.—$\frac{1}{8}$ to $\frac{1}{4}$ gr. or (.008 to .015 gm.).

MORPHINÆ SULPHAS—$(C_{17}H_{19}NO_3)2.H_2SO_4 \quad 5H_2O$.
Morphine Sulphate.

Definition.—The sulphate of the alkaloid morphine, obtained from opium.

Preparation.—By dissolving the alkaloid in dilute sulphuric acid to form a neutral solution and setting aside to crystallize. The official salt contains 11.87% of water of which only a part can be expelled at 100°C.; the remainder at 135°C.

Description.—White, feathery, silky crystals or in cubical masses; odorless, bitter taste.

Tests.—Solubility:

In water at	25°C.	or 77°F.,	1: 15.3 parts
In water at	80°C.	or 176°F.,	1: .6 parts
In alcohol at	25°C.	or 77°F.,	1:465.0 parts
In alcohol at	60°C.	or 140°F.,	1:187.0 parts

Insoluble in ether and chloroform.

Both its aqueous and alcoholic solutions have an alkaline reaction to litmus.

When heated to 250°C. or 482°F. morphine sulphate assumes a brown color and then chars without melting.

When ignited it is very slowly consumed, leaving no residue.

Morphine sulphate in solution, when neutralized with ammonia water (10%) in the same way as given under morphine hydrochloride and acetate, should respond to the tests and reagents prescribed under morphine.

Physiological Action and Dose.—The same as that of the alkaloid.

The most important unofficial salts of morphine are: hydrobromide, citrate, meconate, phthalate, tartrate, and valerate. These all should respond to the tests prescribed under morphine and should be tested for in the same way as the hydrochloride, sulphate, or acetate.

CODEINÆ SULPHAS—$(C_{18}H_{21}NO_3)_2H_2SO_4.5H_2O$.
Codeine Sulphate.

Definition.—Is the sulphate of an alkaloid obtained from opium or prepared from morphine by methylization. Codeine sulphate represents about 76% of the alkaloid and is far less soluble than codeine phosphate.

Preparation.—By evaporating a solution of the alkaloid (codeine) in dilute sulphuric acid.

Description.—Glistening, long needle shaped crystals, or a crystalline powder, odorless and having a bitter taste. It is efflorescent in warm air, and loses its water of crystallization at 100°C. or 212°F.

Tests.—Solubility:

In water at	25°C. or 77°F.,	1: 30	parts
In water at	80°C. or 176°F.,	1: 6.25	parts
In alcohol at	25°C. or 77°F.,	1:1030	parts
In alcohol at	60°C. or 140°F.,	1: 340	parts

Insoluble in chloroform, ether, benzine, and carbon disulphide.

Both its alcoholic and aqueous solutions are alkaline in action.

Codeine sulphate should respond to the tests and reactions of codeine (alkaloid), also the action and dose same as for codeine.

CODEINÆ PHOSPHAS—$C_{18}H_{21}NO_3(H_3PO_4)_2\ 2H_2O$.
Codeine Phosphate.

Definition.—The phosphate of an alkaloid from opium, or prepared from morphine by methylization.

Preparation.—By evaporating and crystallizing a solution of the (alkaloid) codeine in phosphoric acid. The salt represents 65% of the alkaloid and 8.32% of water, corresponding to two molecules.

Description.—In colorless crystalline needles or a white crystalline powder, odorless and having a bitter taste.

Tests.—Solubility:

In water at	25°C. or 77°F.,	1: 2.25	parts
In water at	80°C. or 176°F.,	1: .46	parts
In alcohol at	25°C. or 77°F.,	1: 261. 0	parts
In alcohol at	60°C. or 140°F.,	1: 97. 0	parts
In ether at	25°C. or 77°F.,	1:1260. 0	parts
In chloroform at	25°C. or 77°F.,	1:6580. 0	parts

Insoluble in benzine and carbon disulphide. Soluble in weak chlorine water without visible change. Ammonia water darkens the solution a little, strong chlorine water dissolves codeine phosphate with a beautiful red color.

Both its aqueous and alcoholic solutions have alkaline reaction to litmus.

Codeine phosphate should respond to the tests given under the alkaloid, codeine. Dose and uses same as for the alkaloid.

CANNABIS INDICA.

Definition.—The dried flowering tops of the pistilate plant of cannabis sativa, grown in the East Indies and gathered while the fruits are yet undeveloped and carrying the whole of their natural resin.

Description.—In dark green compressed masses consisting of the densely paniculate branchlets and a resinous exudation usually with a few undeveloped leaves of one or more linear leaflets, clothed with pointed bracts, each containing two small mature but unfertilized pistillate flowers. Odor agreeable and narcotic. Taste characteristic.

Cannabis Indica appears to contain no peculiar alkaloid, but the drug may yield a certain preparation of chlorine or some decomposition product of the base during extraction. The drug also contains a volatile oil consisting chiefly of a sesquiterpene (cannabene), but the chief constituent is a resin of which cannabine is the active principle.

The loss of activity of cannabis indica is due to the oxidation of cannabinol. The female plant is alone active.—Humphrey in Pro. of A. Pha. A. (vol. 50), p. 888.

As yet there have been no positive chemical tests given for cannabis indica. The best test is that of the physiological action of the drug.

Physiological Action.—Antispasmodic, analgesic, anaesthetic, and narcotic. A cerebral spinal stimulant and a powerful aphrodisiac. It increases intellectual and motor activity, stimulates the vaso-motor nerves, raising arterial tension and depresses sensation. Taken in overdoses it has two characteristic actions, a pleasant intoxication or hallucination and prolongation of time.

Dose.—1 gr. or .065 gm.

CHLORALUM HYDRATUM—$C_2HCl_3O+H_2O$.

Chloral Hydrate—Chloral.

A crystalline solid composed of trichloraldehyde or chloral with one molecule of water. Separate crystals, rhomboidal shape, colorless and transparent, slowly volatilized on exposure to air. Odor aromatic, penetrating, bitter, disagreeable taste. A fresh aqueous solution is neutral, acquiring an acid reaction. A neutral alcoholic solution which will remain neutral.

Tests.—Solubility: Practically soluble in all liquids, as water, alcohol, ether, chloroform, benzene, petroleum benzine, carbon disulphide, fixed and volatile oils.

It liquefies when triturated with about equal quantities of camphor, menthol, thymol, and phenol. Dried and heated it melts at about 58°C. into a liquid of specific gravity, 1.575. Liquefied chloral hydrate solidifies to a crystalline mass between 35°C. and 50°C. It decomposes at 97.5°C. into chloral and water. Its vapor is not com-

bustible. In concentrated solution it is oxidized by pot. permanganate to tri-chlor-acetic acid, $CH.C_2Cl_3O_2$. Caustic alkalies, alkaline earths, and ammonia decompose it, giving chloroform and a formate of a base: $C_2HCl_3O+NaOH=NaClO+CHCl_3+O$.

Sulphuric acid poured upon a small amount will form two layers, the upper chloral, the water being taken out by the sulphuric acid.

It may be quantitatively assayed by converting into chloroform by KOH solution or by estimating the formic acid produced. One part of chloral hydrate yields .7218 parts of chloroform, by weight. The volumetric method of M. Meyer is accurate and practical. (See U. S. D., 1905, p. 408). Chloral hydrate distills with steam from a solution acidified with tartaric acid and appears in the distillate as such. The distillate gives the chloroform reactions, but not the characteristic chloroform odor. By warming the distillate with caustic potash solution the chloroform odor is detected. Test the distillate further by heating a portion for thirty minutes under a reflux condenser with calcined magnesium oxide. Formic acid is produced by decomposition of chloral hydrate. Chloral hydrate may be further identified by the following tests:

Filter to remove undissolved magnesium oxide, and concentrate the filtrate by evaporation on a water bath. Divide into two parts. To the first part add a few drops of $HgCl_2$ solution and warm. Formic acid, if present, will give a precipitate of white mercurous chloride, HgCl.

To the second part add silver nitrate solution and warm. Formic acid, if present, will separate metallic silver: $Mg(COOH)_2+4AgNO_3 = 4Ag\ \ Mg(NO_3)_2+2HNO_3+2CO_2$.

Jaworowski's Test.—Add a few drops of Nessler's reagent to an aqueous solution of chloral hydrate. A brick red precipitate will be produced at first, changing to a dirty yellowish green, HgI or Hg_2I_2.

Physiological Action.—Hypnotic, slows the respiration and circulation.

Dose.—15 to 30 gr.

Derivatives and Allied Compounds.—Chloral-amylene-hydrate, or dormiol, chloral-amide or tri-chlor-amido-ethyl-alcohol, chloralose or anhydro-gluco-chloral, somnal or ethylated-chloral-urethane, chloral-urethane or ural, uralium, uraline.

CHLORALIMIDE—$CCl_3CH.NH$.

Tri-chlor-ethyliden-imide.

Definition.—Chloral-imide is a decomposition product of chloral-amide, formed when the latter is heated.

Description.—A crystalline compound, slightly soluble in water, soluble in ether and alcohol.

Uses.—Hypnotic, antipyretic, and analgesic.

Dose.—3 to 7 gr. (0.2 to 0.45 gm.).

CHLORAL-ACETO-PHENONOXIM—$C_6H_5.CH_3C.NO.CHOHCCl_3$.

Definition.—A compound obtained by interaction of chloral and aceto-phenon-oxim at low temperatures.

Description.—It occurs in colorless, prismatic crystals, melting at 81°C. or 177.8°F.; soluble in alcohol and ether. When brought into contact with acids it decomposes into its constituents.

Physiological Action and Uses.—A valuable remedy in epilepsy and tetanous.

CHLORAL ALCOHOLATE—$CCl_3CH(OH)OC_2H_5$.

Definition.—Chloral alcoholate is an intermediate product formed in the preparation of chloral by the process of saturating alcohol with chlorine.

CHLORALAMIDE—$CCl_3CHO.HCONH_2$.
Chloral formamide or Tri-chlor-aldehyde-formamide.

Definition.—Is an addition product of chloral (anhydrous) CCl_3COH, and formamide, $CH(OH)NH$.

Description.—Colorless, odorless, shining crystals, with a bitter taste.

Tests.—Solubility:

In water at.....25°C. or 77°F., 1:18.7 parts
In alcohol at.....25°C. or 77°F., 1: 1.3 parts

Readily soluble in ether, glycerin, acetone, and acetic acid.

When heated with water to 60°C. it is decomposed into chloral and formamide. It melts at 114°C. or 237.2°F. Heated with a solution of sodium hydroxide (15%), an odor of chloroform and ammonia is perceived. The latter is also recognizable by its reaction with hydrochloric acid, with clouds, when a glass rod dampened with hydrochloric acid is held over the heated mixture. An aqueous solution has an extremely bitter taste. If heated carefully in an open dish, it should not give off inflammable vapors, and should be completely volatile.

Physiological Action and Uses.—Hypnotic. It is the least depressant and most efficient sleep producer with no unpleasant after effects. It is mainly used in insomnia, particularly in the simple or idiopathic form, although it has some uses as an analgesic.

Dose.—15 gr.

CHLORALOSE—$C_8H_{11}Cl_3O_6$.

Definition.—A compound obtained by heating chloral and glucose.

Description.—Occurs in the form of fine colorless needle shaped crystals, melting at 184°—185°C., difficultly soluble in cold water, more soluble in warm water, very soluble in alcohol.

Dose and Use.—12 gr. or .77 gm. Hypnotic.

HYPNAL—$C_{11}H_{12}N_2O$ $CCl_3CH(OH)_2$.

Definition.—Mono-chloral-antipyrine, chloral antipyrine, tri-chlor-aldehyde-phenyl-di-methyl-pyrazolon. A compound formed by the direct union of chloral and antipyrin.

Description.—Hypnal forms colorless crystals, which melt at 67.5°C. (154°F.), and are readily soluble in warm water.

Uses.—Hypnotic and analgesic.

Dose.—15 to 30 gr. (16.2 gm.).

URALINE—$CCl_3CH(OH)NHCO_2C_2H_5$.

Definition.—Chloral urethame, uraline, a compound of chloral and ethyl carbonate.

Description.—Uraline is a white powder, melting at 103°C. (217.4°F.), insoluble in cold water, very soluble in alcohol, and in ether. When boiled with water it decomposes into chloral and urethene.

Uses and Dose.—Hypnotic and sedative. Dose, 30-45gr. (2-3g).

DORMIOL.

Definition.—A proprietary preparation, an aqueous liquid said to contain camphor and chloral.

Uses.—A hypnotic.

ACETANILIDUM.

Acetanilid, antifebrin, phenyl-acet-amide.

Definition.—The mon-acetyl derivative of aniline—$C_6H_5NHCH_3CO$.

Preparation.—Made by heating a mixture of aniline and glacial acetic acid to the boiling point. When cool the congealed mass is purified by subliming or by recrystallization.

Description.—Crystalline powder, or in colorless, glistening, micaceous lamina or leaflets; odorless, of slightly burning taste, and neutral reaction.

Tests.—Solubility:

In water at	15°C.,	200 parts
In water at	25°C.,	179 parts
In water at	100°C.,	18 parts
In alcohol at	25°C.,	2.5 parts
In alcohol at	190°C.,	.4 parts
In ether at	25°C.,	12.0 parts
In chloroform at	25°C.,	5 parts

Very slightly soluble in benzol; soluble in carbon disulphide.

Melts at 113°C. and boils at 295°C. without decomposition. On ignition it is consumed without appreciable residue.

Heated to boiling with potassium hydroxide solution, acetanilid is decomposed into aniline and potassium acetate The aniline formed has a characteristic odor.

One gram acetanilid dissolves in one cc. of sulphuric acid, imparting no color.

If acetanilid and sodium nitrite or nitrite are strewn on sulphuric acid, a bright red color results.

One cc. of the sulphuric-chromic acid solution shaken with 1 gm. of acetanilid gives an intense red color at once, turning blue and soon fading.

Cold nitric acid gives no color with acetanilid.

Indophenol Test.—A small amount of acetanilid is boiled with about 2 cc. of concentrated hydrochloric acid. Cool and add 2-4 cc. of a saturated aqueous carbolic acid solution. A few drops of calcium hypochlorite solution will give a dirty reddish-violet color on standing, which becomes deeper, especially on shaking. On carefully adding ammonia water, an upper layer will form and assume a deep indigo-blue color. The hydrochloric acid decomposes the acetanilid into aniline and acetic acid. Calcium hypochlorite oxidizes aniline into para-amido-phenol ($C_6H_4OH.NH_2$, 1, 4), which in presence of an oxidizing agent combines with phenol to form an indophenol.

Phenyl-iso-cyanide Test.—A small amount of acetanilid is boiled with a few cc. of potassium hydroxide solution. Add 2 or 3 drops of chloroform, and heat again. The very offensive, poisonous phenyl-iso-cyanide is formed (C_6H_5NC), distinguishing it from methyl acetanilid or antipyrine.

Calcium Hypochlorite Test.—By boiling acetanilid a few minutes with an alcoholic solution of potassium hydroxide it is completely decomposed. If the product of the reaction is diluted with water, the aniline will be left and may be extracted with ether. On evaporation the aniline will be left as an oily liquid. Dissolve in water and test with calcium hypochlorite.

Brom-acetanilid Test.—If .1 gm. of acetanilid is heated with 10 cc. of water and the solution filtered when cold, and then bromine test solution is added, drop by drop to the filtrate, a whitish precipitate of para-brom-acetanilid is formed, distinguishing it from antipyrine or acet-phenetidin (phenacetin).

Negative Ferric Chloride Test.—A cold saturated aqueous solution of acetanilid does not effect ferric chloride test solution.

Derivatives of Acetanilid.—Acet-phenetidin, (phenacetin), methoxy-acetanilid, citrophen, di-acetanilid, lactophenin, methyl-acetanilid (exalgin), para-iodo-acetanilid, iodo-antipyrin. It is a supposed constituent of ammonol, antikamnia, phenolid, exodyne, antikol, pyretin, phenalgyne, and kaputin. Preparations likely to contain acetanilid are analgesics, antineuralgics, antirheumatics, cachet, capsules or powders for colds or headaches, granular effervescent salts, pills, or tablets as for pain remedies.

Physiological Action.—Introduced as an antipyretic, experience has shown it to possess strong analgesic power. An ordinary dose pro-

duces a sedative effect on the sensory nervous system with little or no effect on the circulation. A toxic dose reduces hæmoglobin to methæmoglobin, diminishing the oxygen carrying power of the blood, and in excessive doses produces corpuscular destruction. Certain persons have an idiosyncrasy for the drug, small doses producing unexpected results.

ACET-PHENETIDIN—$C_6H_4(OC_2H_5)NHC_2H_3O$.

P'aracetphenetidin, oxyethylacetanilid, and phenacetin.

Definition.—A phenol derivative. The product of the acetalization of para-amido-phenetol.

Description.—White crystalline laminæ, or a fine crystalline powder; odorless and tasteless.

Tests.—Solubility:

In water at	25°C. or 77°F.,	1:	325 parts
In alcohol at	25°C. or 77°F.,	1:	12 parts
In ether at	25°C. or 77°F.,	1:	63 parts
In chloroform at	25°C. or 77°F.,	1:	20 parts
In water at	20°C. or 68°F.,	1:	1500 parts
In alcohol at	20°C. or 68°F.,	1:	16 parts
In ether at	20°C. or 68°F.,	1:	70 parts
In chloroform at	20°C. or 68°F.,	1:	30 parts
In boiling water at	20°C. or 68°F.,	1:	70 parts
In boiling alcohol at	20°C. or 68°F.,	1:	2 parts

Slightly soluble in carbon disulphide.

Its melting point is 135°C. or 275°F. Ignited on platinum foil, it leaves no residue. The aqueous solution does not affect litmus.

Phenacetin dissolves in pure sulphuric acid without color and should give no color even when warmed on a water bath, nor on the addition of ferric chloride test solution. It dissolves in cold nitric acid without color.

.1 gm. of phenacetin is dissolved in concentrated hydrochloric acid only by warming; this solution becomes turbid on the addition of 8 cc. of water, but clears up again on warming. The solution becomes purple on the addition of 1 drop of a 5% solution of potassium dichromate; a bright red on the addition of (0.5) ½ cc. of ferric chloride test solution; this color soon changes, however, to a dirty green. (F.)

A dark violet colored solution, which turns green in a few hours, if equal portions, .03 gm. each of phenacetin and sodium nitrite ($NaNO_2$) be triturated together and this mixture strewn upon 1 cc. of concentrated sulphuric acid. The color reaction is immediately green, if sodium nitrate ($NaNO_3$) is substituted for the nitrite. The green color produced soon turns brown. (F.)

An odor of ethyl acetate is liberated by warming a mixture of .5 gm. of phenacetin in 1 cc. of alcohol (94.6%, by volume), and 2 cc. of concentrated sulphuric acid. (F.)

An odor of phenyl-iso-cyanide is liberated when .2 gm. of phenacetin is boiled with 5 cc. of a 10% solution of caustic soda (NaOH), and the mixture allowed to cool. .02 gm. of chloral hydrate added and the mixture warmed again. (F.)

A reddish brown liquid is obtained in the course of an hour, when five drops of a 10% solution ammonia water is added to 10 cc. of a saturated aqueous solution of phenacetin, previously diluted with an equal volume of chlorine water. (F.)

Chromic Acid Test.—Dissolve phenacetin and two or three cc. of concentrated hydrochloric acid and boil for one minute. Dilute with 10 to 20 cc. of water and filter when cold. A few drops of chromic acid solution added to the filtrate will gradually produce a ruby red color. (W.)

Hinsberg Test.—Heat phenacetin to boiling with a few cc. of dilute nitric acid (10-12%), it dissolves and gives an intense yellow to orange color. As the solution cools, if sufficiently concentrated, nitro-phenacetine is formed, which crystallizes in long lemon yellow crystals. This test is delicate and characteristic of phenacetine. (W.)

Indo-phenol Test.—Boil phenacetin 1 or 2 minutes with about 2 cc. of concentrated hydrochloric acid; dilute with water and add a few cc. of aqueous carbolic acid solution. Filter when cold. If a few drops of freshly prepared calcium hypochlorite be added, the filtrate will have a beautiful carmine red color. The addition of ammonium hydroxide solution in excess will change this color to violet blue. Freshly prepared chlorine water, or 3% chromic acid solution may be substituted for the hypochlorite solution. Chromic acid gives more of a ruby red color. Since acetanilid gives the indo-phenol test, the nitric acid test is more reliable in identifying phenacetin.

Physiological Action.—It reduces pyrexia gradually and causes perspiration without producing collapse. It is also hypnotic and antiseptic in its action, relieving pain and producing sleep.

CITROPHEN—$C_3H_4(OH)(CO.NH.C_6H_4OC_2H_5)_3$.

Definition.—A compound of citric acid and para-phenetidin ($C_2H_4NH_2.OC_2H_5$) with three phenetidine groups to one molecule of citric acid.

Description.—A white crystalline powder of an acidulous taste, soluble in about forty parts of cold water; melts at 181°C. or 358°F. Is an antipyretic and antineuralgic in doses of (.5 to 1 gm.) or 8 to 15 gr. Its solubility in cold water recommends it for subcutaneous injections.

DIACETANILID—$C_6H_5N(C_2H_3O_2)_2$.

A compound prepared by heating acetanilid with glacial acetic acid, in an autoclave at 200°-250°C.

The physiological action of diacetanilid is similar to, but stronger, than, that of acetanilid.

LACTOPHENIN—$C_6H_4(OC_2H_5)NH.CO—CH(OH)CH_3$.
Lactyl phenetidin.

Obtained by the action of lactic acid on phenetidin in the presence of dehydrating agents.

A crystalline powder having a bitter taste. More soluble than phenacetine (1:500). Melts at 117.5°C.

Uses and Dose.—Antipyretic and sedative (.5 to 1 gm.) 8 to 15 gr. (C.)

METH-OXY-ACETANILID—$C_6H_4.OCH_3.NH.CH_3CO$.

Definition.—Para-acet-amidin, para-oxy-methyl acetanilid, and methacetine. This is an analogous compound to phenacetine, being the methyl ester of paraphenetidin, or it may be regarded as acetanilid in which a hydrogen in the benzene nucleus is substituted by an oxy-methyl group, (OCH_3).

Description.—Methyl-acetanilid occurs in colorless, scaly prisms or crystals, odorless and tasteless. Melts at 127°C. or 260°F.

Tests.—Solubility:

In water at	15°C. or 60°F.,	1:500 parts
In boiling water at		1: 12 parts
In alcohol (very readily)		
In glycerol at	70°C. or 158°F.,	1:100 parts
In olive oil at	90°C. or 194°F.,	1:100 parts
In ether at	20°C. or 68°F.,	7:100 parts
In ether at	15°C. or 60°F.,	6:100 parts

Easily soluble in acetone, chloroform, and the fatty oils, less soluble in carbon disulphide.

Methoxyacetanilid does not effect litmus. It is easily soluble in sulphuric acid, the solution being colorless at 100°C., but of a violet color if heated to a higher temperature.

Crystals form when a solution of .1 gm. of methaceetine in 2 cc. of warm sulphuric acid is carefully diluted with 2 cc. of water, and the liquid allowed to cool.

Sulphuric acid containing chromic acid is decolorized when methacetine is strewn upon it.

.1 gm. of methacetine dissolves easily in 5 cc. of hydrochloric acid (C. P.). This solution is colorless, and crystals of methacetine form in a few hours; they do not form if a strong acid is used, at least not until a much longer time.

When methacetine is heated to boiling with .5 cc. of hydrochloric acid, cooled and diluted with 3 cc. of water, and on the addition of 1 drop of a 5% solution of potassium dichromate, a red color is produced.

Iso-nitril Reaction.—If 1 gm. of methacetine is warmed with 1 cc. of caustic soda (NaOH) solution, 15%, and 3 drops of chloroform, it gives off the offensive poisonous odor of phenyl-iso-cyanide.

A bright green colored fluid is obtained when a mixture of .03 gm. of methacetine and .03 gm. of sodium nitrate ($NaNO_3$) is strewn upon 1 cc. of concentrated sulphuric acid. The acid is colored violet if sodium nitrite is used.

.2 gm. of methacetine dissolves in 2 cc. concentrated nitric acid with a reddish-yellow color; this solution soon becomes turbid, and when heated solidified to a crystalline mass. When this is dissolved in 15 cc. of water at the boiling point, short yellowish red prisms form when the liquid is allowed to cool. They differ in shape from the crystals obtained in the similar reaction with phenacetin.

Methacetine when shaken with 10 cc. of chlorine water, colors it a faintly reddish yellow color; a few drops of 10% ammonia water added changes this immediately to a brownish red. Phenacetine gives the same brown color reaction, but less intense than methacetine, because the former is less soluble in chlorine water.

METHYL-ACETANILID, EXALGIN.—$C_6H_5N(CH_3)(C_2H_3O)$.

A methylated acetanilid, prepared by the interaction between acetyl chloride and mono-methyl-anilin.

It forms acicular needles, which are difficultly soluble in cold water and very readily soluble in alcohol and dilute alcohol. It melts at 100°C. or 212°F.

Physiological Action and Uses.—An antineuralgic, given in doses of 3 to 6 gr. or .2 to .4 gm.

PARA-IODO ACETANILID—$C_6H_4INHC_2H_3O_2$.
Iodo-acetanilid, iodo-antipyrine.

Definition.—Prepared by the action of iodine on acetanilid. It forms a crystalline powder, insoluble in water, and which melts at 181°C. It is almost inert as far as its physiological action is concerned.

COCAINE, ALKALOID—$C_{17}H_{21}O_4$ or $C_9H_{12}(C_9H_9O)NO.COOCH_3$.

Synonyms.—Benzoyl-methyl-ecgonine, cocainum, methyl-benzoyl ecgonine, and cocaine.

Definition.—An alkaloid obtained from the leaves of several species of coca: erythroxylon, huxamuco, or truxillo.

Description.—In colorless four to six sided monoclinic prisms, odorless, bitter taste, producing on the tongue a temporary local anæsthesia.

Tests.—Solubility:

In water at	15°C.	or 60°F.,	1:1500 parts
In water at	18°C.	or 64°F.,	1:1370 parts
In water at	25°C.	or 77°F.,	1: 600 parts
In water at	80°C.	or 176°F.,	1: 260 parts
In alcohol at	25°C.	or 77°F.,	1: 5 parts

It dissolves as follows in the named solvents at 25°C. or 77°F.: ether, 1:3.8; chloroform, 1:.5; olive oil, 1:14; oil of turpentine, 1:14.6; it is very soluble in warm alcohol; it is also soluble in benzene, carbon disulphide, carbon tetrachloride, toluene, ethyl acetate, fixed and volatile oils. It is insoluble in glycerine, lard, and vaseline.

Cocaine melts at 98°C. or 208.4°F.; it melts in water at 85°C. or 185°F.

Cocaine has an alkaline reaction when strewn on red litmus paper previously dampened with water or alcohol, which disappears when the paper becomes dry.

Nearly all the alkaloidal reagents give characteristic precipitates with solutions of cocaine salts. Iodine-pot. iodide, pot. mercuric iodide, phospho-molybdic, phospho-tungstic, and picric acids are especially delicate. (W.)

When cocaine is boiled with water and calomel, the latter blackens. This reaction does not take place in the cold nor when alcohol is substituted. (F.)

Concentrated Acid Tests.—Concentrated nitric acid and sulphuric acid dissolves cocaine without color.

Potassium Permanganate.—Add 1% solution of pot. permanganate (drop by drop) to a concentrated aqueous solution of a cocaine salt, a violet colored crystalline precipitate of cocaine permanganate results. In applying this test to a residue extracted with ether supposed to contain cocaine, first dissolve a considerable quantity of the residue in a small amount of dilute hydrochloric acid and add the permanganate of potassium solution (drop by drop)). This is a very delicate test for cocaine. (W.)

If an alcoholic solution of cocaine be carefully neutralized with hydrochloric acid, and the solution evaporated to dryness on a water bath, the residue should respond to the reactions and tests given under cocaine hydrochloride.

Derivatives of Cocaine.—Cocaine hydrochloride, oleate, and other salts of cocaine.

Physiological Actions.—The same as that prescribed under cocaine hydrochloride; the dose is similar also.

Dilute acids readily dissolve the alkaloid, cocaine, and in most cases form readily crystallizable salts. The alkalies, alkali carbonates, and ammonia precipitate the free base from solutions of its salts. Cocaine is a tertiary base which contains one methoxyl group and one methyl group attached to a nitrogen atom. Moreover it is an ester. Cocaine boiled with water is decomposed into benzoyl-ecganine and methyl alcohol. If a mineral acid, a solution of barium hydroxide, or an alkali, be substituted for water, benzoyl ecgonine also will be decomposed. Cocaine, therefore, yields ecgonine, benzoic acid and methyl alcohol.

COCAINE HYDROCHLORIDUM—$C_{17}H_{21}NO_4.HCl$.

Synonyms.—Cocaine hydrochlorate, cocaine hydrochloride, and cocaine muriate.

Definition.—The neutral hydrochloride of an alkaloid obtained from the leaves of several varieties of coca.

Preparation.—By dissolving the pure alkaloid cocaine in an alcoholic solution of hydrochloric acid and crystallizing the anhydrous salt.

Description.—Colorless, transparent, monoclinic prisms, or a white crystalline powder. When crystallized from an alcoholic solution it appears in prismatic crystals, odorless, saline, of a slightly bitter taste.

Tests.—Solubility:

In water at	25°C. or	77°F.,	1 : .4 parts
In water at	80°C. or	176°F.,	1 : .1 parts
In alcohol at	25°C. or	77°F.,	1 : 2.6 parts
In alcohol at	60°C. or	140°F.,	1 : 1.4 parts
In chloroform at	25°C. or	77°F.,	1 :18.5 parts

Soluble in amyl alcohol; insoluble in ether, petroleum benzine, and benzene. The aqueous and the alcoholic solutions are neutral to litmus. Melting point, 200°C. or 392°F.

Lime water gives with its aqueous solution (1:50) a turbidity which is redissolved by the addition of more of the reagent, (lime water). Less ammonia water (10%) is required to redissolve the turbidity produced with lime water, but the cocaine soon crystallizes, and more quickly than in lime water. (F.)

.1 gm. of cocaine hydrochloride dissolves in 1 cc. of sulphuric acid without color, but the solution turns brown when heated; colorless crystals of benzoic acid sublime from it along the sides of the test tube. (F.)

When cocaine hydrochloride is triturated with calomel, equal parts, the mixture blackens by the slightest humidity (breathing on it), or by moistening it with alcohol.

Cocaine hydrochloride does not reduce pot. permanganate. One drop of the pot. permanganate solution (1:1000), added to 5 cc. of an acidulated aqueous solution of the salt, 4%; the solution remains pink from one-half to one hour.

.1 gm. of cocaine hydrochloride changes the color of 1 cc. of a solution of chromic acid in sulphuric acid ($K_2Cr_2O_7$, .02 gm.; H_2SO_4, 30 gm.; H_2O, 10 cc.) to red, when strewn upon it; the change to green (due to the formation of chromium sulphate) does not commence under an hour.

When 1 drop of ferric chloride normal test solution is added to 2 cc. of an aqueous solution of cocaine hydrochloride, a faint yellow color is produced, which turns to a red on boiling. The alkaloid gives

the same reaction. The red compound formed in the reaction (benzoate of iron) is insoluble in ether and chloroform, but soluble in alcohol; the red colored liquid becomes yellow on the addition of hydrochloric acid. A comparative test should be made with a small amount of cocaine hydrochloride in water with the addition of ferric chloride test solution. (F.)

A saturated aqueous solution of iodine, mercuric potassium iodide test solution (N/10); mercuric chloride solution (5%); mercuric bromide solution (.5%); and a saturated solution of picric acid, all give precipitates with dilute aqueous solutions of cocaine hydrochloride. (F.)

Two drops of tannic acid solution (5% in water) added to 1 cc. of an aqueous solution of cocaine hydrochloride (1:50) cause a turbidity which is redissolved in an excess of the tannic acid solution. (F.)

A green colored liquid is obtained when .01 gm. of cocaine hydrochloride is heated with 1 cc. of sulphuric acid until vapors are seen and by the addition of .02 gm. of potassium iodate the liquid changes to a reddish brown color, if overheated. (F.)

Evaporate to dryness on a water bath .01 gm. of cocaine hydrochloride or the alkaloid in 1 cc. of nitric acid, the residue remaining is colorless. Add to this a few particles of caustic potash or soda and a few drops of alcohol, when a delicious odor of benzoic-ethylester is developed. (F.)

Cocaine hydrochloride leaves no residue on incineration. (R.)

Silver nitrate test solution added to an aqueous solution of cocaine hydrochloride (1:100) gives a white precipitate, insoluble in nitric acid.

Five dorps of a solution of chromium trioxide (1:20) added to 5 cc. of a solution of cocaine hydrochloride (1:50) produces a yellow precipitate which redissolves on shaking; on adding now 1 cc. of hydrochloric acid a permanent orange colored precipitate will be formed. (R.)

On adding a solution of potassium chromate (1:20) to a solution of cocaine hydrochloride in hydrochloric acid orange yellow leaflets of cocaine chromate are precipitated.

Physiological Action and Uses.—Dieuretic, local anæsthetic, cerebral, cardiac, respiratory, and nervous stimulant. Small doses improve digestion, stimulate respiration, increase the heart's action, raises arterial tension, and exalts the irritability of the sensory nerves. In an overdose it paralyzes the sensory nerves, the posterior columns of the spinal cord, the intra-cardiac motor ganglia and the respiratory centers, producing hallucination and delirium tremens. It produces dilation of the pupil both locally applied and when taken systematically.

Dose.—1/4 to 1 gr. or .015 to .065 gm.

COCAINE OLEATE—$C_{17}H_{21}NO_4.C_{17}H_{33}COOH$.

Definition.—A liquid preparation—a solution containing 5% of cocaine in oleic acid and olive oil.

The cocaine may be extracted by the following process, and after extraction should respond to the tests given under the cocaine.

Process of Extraction.—First, exrtact the oleate of cocaine with ether, which dissolves out the cocaine and olive oil, leaving oleic acid. Separate the two solutions by the use of a separatory funnel. The ether solution of cocaine and olive oil is then shaken with alcohol which extracts out the cocaine, and is separated from the olive oil in the same manner as mentioned above. Then the alcohol may be shaken with carbon disulphide to separate any olive oil that may have been extracted, and after separating the alcoholic solution from carbon disulphide by the use of a separatory funnel, evaporate it to dryness on a water bath; and test the residue for cocaine.

The physiological action of cocaine oleate is the same as that of cocaine.

HEROIN OR DIACETYL-MORPHINE—$C_{17}H_{17}NO(C_2H_3O_2)_2$.

Definition.—Heroin is an artificial alkaloid, the acetic ester of morphine.

Description.—It has the form of a white odorless, crystalline powder or of white glistening crystals; bitter taste, and alkaline reaction.

Tests.—Solubility: Insoluble in water and ethers; soluble in dilute acids, alcohol, chloroform, and benzene.

Heroin melts at 173°C. On incineration it leaves no residue.

The color reactions of heroin are similar to those of morphine with the alkaloidal reagents; however, unlike morphine it does not liberate iodine from iodic acid.

Its aqueous solution gives with a few drops of the mixture of solutions of ferric chloride and potassium ferrocyanide a deep blue color. This test is also characteristic of morphine.

Nitric Acid Test.—Heroin with concentrated nitric acid gives a yellow color, turning to a red on warming.

Physiological Action and Dose.—Heroin has a marked action on the respiratory centers, especially in the chest and in catarrhal affections of the respiratory tract. Dose, 1-16 to 1-6 gr.

Formaldehyde-Sulphuric Acid Test.—This reagent gives a red color which will change to violet and finally to blue violet.

ALPHA EUCAINE—$C_{19}H_{25}NO_4$.

Definition.—An artificial alkaloid resembling cocaine; chemically a benzoyl-methyl-tetramethyl gamma-oxy-piperidin-carboxylic-methyl-ester. (C.).

Description.—Glassy prisms, permanent in air.

Tests.—Melting point, 104°C.

Potassium Iodide (1:10) gives, even in dilute solutions of the hydrochloride, a white silky, glistening precipitate; ammonia even in dilute solution precipitates eucaine, the precipitate being almost insoluble in excess.

Potassium dichromate in strong solutions added drop by drop to a .5% solution of eucaine gives a fine lemon yellow precipitate, the precipitate being very much increased by the addition of concentrated hydrochloric acid and becomes insoluble. A 1% solution of cocaine affords no precipitate until hydrochloric acid is added and the precipitate then formed is easily soluble in excess of the acid. (P.)

Negative Test.—A-eucaine gives the same reactions as cocaine with the alkaloidal reagents.

Physiological Action.—Local anæsthetic, much less toxic than cocaine, almost as efficient; exhibits no action on the heart; but it causes some irritation and pain; used etxernally in 5-10% solutions.

Dose.—⅛ to¼ gr.

BETA EUCAINE—$C_{15}H_{21}NO_2$.

Definition.—An artificial alkaloid resembling cocaine. Chemically the benzoyl-vinyl-diaceton-alkamine.

Description.—A white crystalline powder. The hydrochloride is the salt most commonly used.

Melting Point.—215°C. Is not decomposed on boiling like cocaine or a-eucaine in aqueous solutions. The test by which it is distinguished from cocaine hydrochloride is its comparative insolubility in alcohol and water.

No chemical tests of positive character have yet been found characteristic of b-eucaine, and at present can be distinguished negatively by its failure to correspond to reactions and tests characteristic of a-eucaine and cocaine.

The eucaine preparations are proprietary, being manufactured by patented processes.

Physiological Action.—Local anæsthetic; is preferred to the alpha variety for ophthalmic work, being less irritating. B-eucaine is used in 2 to 5% solutions for hypodermic injection in doses of ¼ to ¼ gr.

CHLOROFORM—$CHCl_3$.

Definition.—A halogen substitution product of methane (CH_4), formyl tetrachloride, or tri-chlor-methane; a liquid consisting of 99-99.4%, by weight, of absolute chloroform and .6-1% of alcohol.

Description.—A heavy, clear, colorless, mobile, and diffusible liquid, of a characteristic pleasant, ethereal odor, a burning sweet taste, and a neutral reaction.

Preparation.—Chloroform is prepared principally by two methods: first, by the action of an alkali on chloral hydrate; second, by the action of calcium hypochlorite on acetone.

Tests.—Solubility: In about 200 times its volume of cold water, in all proportions in alcohol, ether, benzol, benzine, fixed and volatile oils.

Specific Gravity.—1.476 at 25°C. or 77°F.

Boiling Point.—60-61°C. or 140-141°F.

Chloroform is very volatile even at a very low temperature. It is not inflammable, but its heated vapors burn with a green flame.

Phenyl-iso-cyanide Test.—Add 1 or 2 drops of aniline to the chloroform solution (distillate) and then a few cc. of an aqueous or alcoholic solution of potassium hydroxide.

General application of heat will produce phenyl-iso-cyanide. The penetrating and very repulsive odor of this compound is easily recognized. The reaction that takes place: $CHCl_3+C_6H_5NH_2+3KOH=C_6H_5NC+3KCl+3H_2O$., a very delicate test for chloroform. It has been found to show with certainty 1 part of chloroform to 5,000 to 6,000 parts of alcohol. Chloral hydrate, bromoform, iodoform, tetrachlormethane and chloral also give this test. The fact that aniline when boiled with potassium hydroxide solution gives a peculiar, faintly ammoniacal odor, even when chloroform is absent, must not be overlooked. There is little chance, however, of confusing this odor with the repulsive odor of phenyl-iso-cyanide. In doubtful cases warm some water containing a trace of aniline and of chloroform (¼ of a drop or less) with potassium hydroxide solution, and compare the odor with that of the liquid in question.

Fehling's Solution Test.—Warm an aqueous chloroform solution with Fehling's solution. A red precipitate of cuprous oxide is produced.

Silver Reduction Test.—Add an excess of ammonia solution to a silver nitrate solution and then some of the chloroform solution. Heat will produce a black precipitate of metallic silver. This test, as is Fehling's test, is due to formic acid, resulting from the decomposition of chloroform by the alkali, as is shown by the reaction: $CHCl_3+4KOH=3KCl+HCOOH+2H_2O$.

Resorcinol Test.—Dissolve about .1 gm. of resorcinol in one to two cc. of water and add a few drops of potassium hydroxide test solution. A yellowish red to a red color attended by a brilliant fluorescence, even in very dilute solutions, will appear. Chloral, bromal, and bromoform also give this test.

Lustgarten's Napthol Test.—Dissolve about .05 gm. of A or B naphthol in 1 or 2 cc. of a 33% aqueous solution of potassium hydroxide. Warm to 50°C. and add the solution to be tested. Chloroform will produce an evanescent blue color which, in contact with air, will change to green and then to brown. Acidification of the blue solution will precipitate naphthol colored by a red dye stuff. This precipitate is of a brick red color. Chloral, bromal, and bromoform also give this test. (W.)

Ludwig's Qualitative Test and Determination of Chloroform in the Cadaver.—Mix a weighed portion of the material with water and distill off the chloroform; when all the chloroform has distilled, which can be easily determined by applying the phenyl-iso-cyanide test to a few cc. of liquid at the end of distillation, add some calcium carbonate to combine with free hydrochloric acid. Warm the distillate to about 60°C., and draw air through it by suction. Pass the air through a combustion tube heated to a high temperature, and then into silver nitrate solution acidified with nitric acid; weigh the silver chloride precipitate; and calculate the percentage of chloroform on the basis of the proportion—3AgCL :$CHCL_3$: :N :X. (W.)

Chloroform heated with steam above 200°C. is decomposed into carbon monoxide, hydrochloric and formic acids.

Physiological Action.—Anæsthetic, narcotic, carminative, and sedative; extremely irritant; it has a paralyzant action on the heart and on account of this action it is a much more dangerous anæsthetic than ether, and is also less stimulating than ether in its action.

Preparations containing, or likely to contain, chloroform: chloranodyne, elixirs, emulsions, liniments, mixtures, spirits, and syrups.

Ralph Emory Kibler.

ROLL OF MEMBERS.

ACTIVE.

Abernethy, T. R.	Newton	1880
Adams, D. L.	Raleigh	1880
Adams, J. L.	Gastonia	1904
Allison, Luther D.	Brevard	1901
Allison, Thomas B.	Burlington	1900
Andrews, Charles McD.	Chapel Hill	1907
Ashford, Alford J.	Kinston	1905
Atkins, D. J.	Durham	1907
Austin, T. E.	Roxboro	1905
Baldwin, Penrose.	Asheville	1904
Ballance, J. R.	Morehead City	1902
Barnes, Ben Shaw.	Winston	1905
Bateman, Walter C.	Wilson	1905
Baucom, Alfred Vernon.	Apex	1906
Beavers, William E.	Enfield	1901
Beck, Robert T.	Germanton	1881
Bell, Holley Mackie.	Windsor	1906
Bellamy, R. R.	Wilmington	1893
Bernard, Germain	Durham	1904
Betts, Benj. R.	Raleigh	1905
Biggs, S. R.	Williamston	1880
Biggs, Warren H.	Williamston	1906
Birdsong, E. G.	Raleigh	1897
Birdsong, Ludlow	Raleigh	1886
Bobbitt, James H.	Raleigh	1906
Bogue, A. G.	Fremont	1899
Bolton, J. C.	Dunn	1904
Boon, W. J.	Benson	1904
Boone, D. Leonard.	Durham	1905
Boyett, Addie H.	Smithfield	1904
Bradham, C. D.	New Bern	1895
Bradley, Augustus, Ph. G.	Burlington	1891

Brame, R. M.	Winston	1901
Bright, Christopher Robert.	Washington	1906
Britton, Geo. W.	Reidsville	1905
Brooks, J. F.	Hendersonville	1899
Bryan, W. D.	Tarboro	1904
Bunting, J. Hicks, Ph. G.	Wilmington	1893
Burwell, G. E.	Tarboro	1890
Burwell, William R.	Charlotte	1898
Byrd, Clement	Littleton	1905
Carmichael, W. C.	Asheville	1904
Carpenter, F. L.	King's Mountain	1901
Carpenter, Oscar B.	Stanly	1905
Carpenter, Robert E.	Shelby	1905
Carte, S	Salisbury	1905
Carter, Jesse	Madison	1882
Cavis, Charles H.	Gastonia	1904
Chears, H. R., Ph. G.	Pactolus	1888
Clapp, Clarence	Newton	1903
Cole, B. L.	Charlotte	1901
Conyers, Z. V., Ph. G.	Greensboro	1893
Cook, A. J.	Fayetteville	1886
Cook, R. E. L.	Tarboro	1904
Cook, W. M.	Salisbury	1904
Cooke, Ernest Stapleton.	Fayetteville	1906
Cooke, Henry Maddry.	Spencer	1906
Costner, Frank Leslie.	Gastonia	1906
Crabtree, Gilbert	Raleigh	1905
Cranmer, John B.	Wilmington	1900
Currie, Angus D., Jr.	Salisbury	1907
Davis, Bertram Swift.	Charlotte	1906
Davis, David R.	New Bern	1903
Davis, George	Beaufort	1900
Davis, John E.	Raleigh	1905
Davis, I. L., Jr.	Morganton	1907
Detter, E. E.	Dallas	1904
Dorsey, Melville	Henderson	1880
Duffy, F. S.	New Bern	1902
Dunn, R. A.	Charlotte	1904
Edwards, James Sidney.	Lindell	1906

Eldridge, C. T.	Greensboro	1907
Ellington, Richard Alex.	Reidsville	1905
Everington, George	Laurinburg	1883
Fariss, John B.	Greensboro	1883
Fentress, H. L.	Wilmington	1883
Few, Vernon	Hendersonville	1904
Field, David Meade.	Washington	1901
Fordham, C. C.	Greensboro	1897
Franklin, O. E.	Fayetteville	1904
Freeze, R. P.	Newton	1900
Galloway, R	Raleigh	1897
Gardner, Howard	Greensboro	1895
Goodman, George C.	Mooresville	1881
Graham, F. R.	Raleigh	1897
Grantham, Hiram.	Red Springs	1904
Grantham, George K.	Dunn	1895
Gray, P. C.	Statesville	1904
Green, W. H., Ph. G.	Wilmington	1880
Hall, William F., Jr.	Statesville	1893
Hamilton, Robert Lee.	Winston	1901
Hancock, F. W.	Oxford	1880
Hand, Jasper Kennedy.	Lowell	1906
Hardin, John H.	Wilmington	1880
Harper, C. P.	Selma	1904
Harrell, J. T.	Asheville	1904
Harrison, A. S.	Enfield	1897
Hart, John Albert.	Hendersonville	1906
Hawley, Frederick Oscar, Jr.	Charlotte	1903
Hayes, William A.	Hillsboro	1891
Herring, William Henry.	Clinton	1906
Hicks, H. T.	Raleigh	1897
Hill, John H.	Goldsboro	1880
Hollowell, Jabez K.	Wilson	1903
Hood, J. E.	Kinston	——
Hood, T. R.	Smithfield	1880
Hood, William D.	Smithfield	1903
Horne, H. R.	Fayetteville	1880
Horne, Warren W., Ph. C.	Fayetteville	1900
Houston, Clarence	Monroe	1900

Howell, E. V., A. B., Ph. G.	Rocky Mount	1892
Hunter, Buxton W.	Raleigh	1888
Hunter, F. D.	Hendersonville	1907
Jacobs, Francis Gilliam	Windsor	1880
Jacobs, Frederic L.	Asheville	1887
Jarman, J. F.	Wilmington	1900
Johnson, Alice Elizabeth	Aberdeen	1893
Johnson, D. D.	Monroe	1886
Johnson, James I.	Raleigh	1880
Jordan, R. H.	Charlotte	1884
Justus, William Hicks	Hendersonville	1887
Kebler, Ralph E.	Morganton	1907
Keenan, Richard A.	Elizabeth City	1905
Kendrick, T. W.	Shelby	1897
Kerner, Lewis C.	Henderson	1905
Kidd, C. B.	Charlotte	1904
King, C. E.	Durham	1904
King, Chas. H.	Durham	1904
King, Harris L.	Durham	1904
King, John A.	Raleigh	1897
King, W. H.	Raleigh	1884
Landquist, Thomas Eugene	Salem	1899
Lee, Parmillus Arten	Dunn	1906
Leggett, W. A.	Edenton	1897
Leslie, W. A.	Morganton	1895
Lodge, William A.	Raleigh	1880
Mabry William A.	Durham	1899
Mansfield, A. L.	Fayetteville	1905
Marion, John E.	Elkin	1907
Marsh, M. L.	Concord	1902
Marsh, Numa Franklin	Ramseur	1906
Martin, Walter S.	Hickory	1901
Matthews, A. B.	Durham	1895
Matthews, G. E.	Enfield	1902
May, W. A.	Rocky Mount	1894
McCraw, William Polk	Littleton	1906
McDonald, A. M.	LaGrange	1903
McDonald H. M.	LaGrange	1880
McKay, J. Loyd, M. D. (life)	King's Mountain	1885

McKesson, L. M.....Morganton 1902
McKinnon, Murdock H.....Red Springs 1900
McMillan, J. D.....Lumberton 1904
McNair, Whit. H., Ph. G...Tarboro 1887
McNeely, S. H.....Clinton 1907
McRae, John Y.....Raleigh 1880
McNeill, George K.....Rowland 1906
McNeill, Geo. R.....Whiteville 1907
Merritt, E. S.....Chapel Hill 1894
Miller, C. B., Ph. G.....Goldsboro 1890
Missildine, E. E.....Tryon 1902
Moody, R. F.....Charlotte 1907
Moore, B. E.....Wilmington 1906
Moore, Chas. E., Jr.....Wilson 1904
Moore, W. Houston.....Wilmington 1905
Moose, A. Walter.....Mt. Pleasant 1893
Moose, G. D.....Mt. Pleasant 1903
Morris, J. De.....Roxboro 1893
Morrison, Matthew Stuart...Concord 1906
Munds, James C. (life).....Wilmington 1880
Nicholson, Thomas H.....Murfreesboro 1888
Niestlie, William .....Wilmington 1887
O'Hanlon, E. W.....Winston 1895
Page, B. Frank.....Greensboro 1906
Parker, Geo. E.....Benson 1904
Parsons, Fred Calvin.....Wadesboro 1906
Payne, Max F.....Greensboro 1905
Pescud, John S.....Raleigh 1880
Pfafflin, H. A.....Asheville 1904
Pilkington, D. R.....Pittsboro 1898
Pleasants, F. R.....Louisburg 1897
Prior, Jackson L.....Raleigh 1880
Raysor, C. A.....Asheville 1904
Reedy, John.....Lincolnton 1881
Reeves, Melven Hezekiah....Waynesville 1906
Reid, W. W.....Sanford 1906
Richardson, L.....Greensboro 1880
Ring, W. A.....Charlotte 1897
Robinson, M. E., M. D.....Goldsboro 1888

Rose, Ira W.	Benson	1906
Sasser, Leonidas B.	Red Springs	1900
Schutt, Theo.	Wilmington	1905
Scott, John M.	Charlotte	1898
Seagle, F. M.	Hickory	1905
Secrest, A. McD.	Monroe	1907
Sedberry, C. D., Ph. G.	Fayetteville	1888
Sedberry, H. S.	Fayetteville	1892
Shell, Junius E.	Lenoir	1898
Shelton, C. T.	High Point	1905
Shepard, John W., Ph. G.	Charlotte	1896
Shepard, Jos. C.	Wilmington	1893
Shuford, C. M.	Hickory	1902
Simmons, J. C.	Graham	1904
Simpson, C. N.	Monroe	1904
Simpson, Robert	Raleigh	1892
Smith, Frank T.	Franklin	1888
Smith, Frank S.	Asheville	1907
Smith, J. B.	Lexington	1882
Smith, John R.	Mt. Olive	1888
Smith, T. C., M. D.	Asheville	1880
Sneed, P. C.	Durham	1894
Southerland, T. R., Ph. G.	Raleigh	1890
Sprague, John F.	Morganton	1888
Stedman, John P.	Oxford	1880
Stowe, James P.	Charlotte	1906
Suggs, Robert Bailey	Belmont	1906
Summey, P. D.	Dillon	1904
Suttle, Julius Albert	Shelby	1906
Sykes, Eugene	Fayetteville	1901
Talley, Hugh A.	Jonesboro	1906
Tarkinton, Edward L.	Raleigh	1903
Taylor, Littlejohn	Washington	1905
Thigpen, John K.	Tarboro	1901
Thomas, Charles R.	Thomasville	1901
Thomas, W. G.	Louisburg	1880
Thomas, E. R.	Duke	1907
Townsend, Edgar F.	Red Springs	1900
Turlington, Randall A.	Wilson	1905

Vaughan, P. W., Ph. G.....Durham 1880
Walker, E. E., M. D.....Snow Hill 1904
Ward, Gaston W.....Greensboro 1893
Ward, Homer Benj.....Rowland 1905
Watson, Geo. Y.....Southport 1904
Way, David .....Asheville 1896
Wearn, W. H.....Charlotte 1884
Welborn, W. T.....Lexington 1904
Welfare, Samuel E.....Winston-Salem 1906
Wheeless, James M.....Charlotte 1901
White, Joseph A.....Davidson 1900
Whitehead, E. T.....Scotland Neck 1888
Wilkins, William R.....King's Mountain 1904
Williams, M. P.....Charlotte 1902
Williams, Robert I.....Raleigh 1880
Wilson, William, Jr.....Charlotte 1901
Wood, Ernest H.....New Bern 1906
Woodall, Junius P.....Charlotte 1887
Wootten, G. R.....Hickory .....——
Worthy, F. S.....Washington 1905
Yearby, William M.....Durham 1889
Young, C. T.....Clayton 1905
Zoeller, Edward V., Ph. G...Tarboro 1880

HONORARY.

Caspari, Prof. Charles, Jr...Baltimore 1892
Purcell, Col. John B.....Richmond, Va.....1890
Venable, Prof. F. P.....Chapel Hill 1890
Williams, John R.....Raleigh 1880
Wooten, Thomas V.....Chicago 1900

ASSOCIATE.

Bodeker, J. Lansing.....Richmond, Va.
Bowers, Jas. Baker.....Richmond, Va.
Bowers, Robt. Lee.....Richmond, Va.
Coble, H. F.....Greensboro, N. C.
Purcell, T. W.....Richmond, Va.
Sadelson, Geo. H.....Southern Pines, N. C.
Sisemore, J. P.....Charlotte, N. C.

Underwood, W. A.....
Van Gorden, Ira R.....Elkhart, Ind.

DECEASED.

Adams, R. H., M. D.....	Gastonia	1884—1888
Aycocke, M. H.....	Louisburg	1894—1904
Bedford, Prof. P. W.....	New York	1881—1892
Bickett, T. W.....	Monroe	1880—1889
Blacknall, R. D.....	Durham	1880—1900
Bobbitt, F. A.....	Winston	1892—1894
Broadfoot, T. W.....	Fayetteville ...	1880—1890
Davidson, J. S. M.....	Charlotte	1880—1889
DeVault, T. M.....	Asheville	1882—1888
Duffy, F. S.....	New Bern	1880—1885
Duffy, R. N.....	New Bern	1880—1895
Fetzer, N. D.....	Concord	1890—1904
Fuller, T. F., M. D.....	Raleigh	1880—1895
Furman, W. H., Jr.....	Louisburg	1880—1890
Garrett, H. B.....	Rockingham ..	1883—1884
Gidney, J. C., M. D.....	Shelby	1881—1890
Gordon, E. S.....	Wilkesboro ...	1882—1882
Green, C. C.....	New Bern	1880—1894
Griffin, John M.....	Rocky Mount .	1888—1902
Grimes, A. L.....	Thomasville ..	1880—1890
Grimes, B.....	Asheville	1882—1882
Hand, W. E.....	Charlotte	1880—1884
Hill, T. B.....	Goldsboro	1880—1891
Hinsdale, S. J.....	Fayetteville ...	1880—1894
Hood, J. C.....	Smithfield	1880—1887
Jordan, J. V.....	New Bern	1881—1895
Johnson, R. E.....	Fremont	1881—1884
Jones, B. C.....	Morch'd City ..	1892—1896
Latham, W. W.....	Seaboard	1881—1895
Lawing, J. M., M. D.....	Lincolnton ...	1884—1894
Lee, A. S.....	Lincolnton	1880—1895
Lewter, J. T., M. D.....	Murfreesboro .	1881—1887
Lucas, H. D., M. D.....	Black Creek ..	1886—1894
Lyons, H. H.....	Asheville	1883—1888
McAden, J. H.....	Charlotte	1884—1906

Miller, F. C.	Wilmington	1880—1893
Nadal, E. M.	Wilson	1889—1896
Owens, B. Bertram	Winston	1901—1902
Parris, D. C.	Hillsboro	1901—1905
Poole, T. W.	Williamston	1887—1890
Quickel, John Carl	Lincolnton	1892—1899
Royster, O. M.	Hickory	1896———
Sedberry, B. E.	Fayetteville	1880—1900
Simmons, B. T.	Weldon	1880—1888
Simpson, William	Raleigh	1880—1905
Smith, Charles H.	Greensboro	1899———
Stewart, L	Laurinburg	1881—1881
Tenny, A. K.	Durham	1880—1888
Thompson, V. O.	Winston	1880—1905
Wagoner, John M.	Statesville	1888—1894
Wriston, L. R.	Charlotte	1880—1906

If any errors are noted in the above the Secretary should be advised thereof. Members of the Association who change their address will confer a favor by notifying the Secretary.

THE CONSTITUTION AND BY-LAWS.

CONSTITUTION.

ARTICLE I.—NAME.

This Association shall be called the NORTH CAROLINA PHARMACEUTICAL ASSOCIATION.

ARTICLE II.—OBJECT.

The aim of this Association shall be to unite the reputable pharmacists and druggists of this State for mutual assistance, encouragement, and improvement, and to advance the science and art of pharmacy, and thereby restrict the dispensing and sale of medicine to properly qualified pharmacists and druggists.

ARTICLE III.—OFFICERS.

This Association shall have the following officers: A President, three Vice-Presidents, a Secretary, a Local Secretary, and a Treasurer; also an Executive Committee, consisting of five members, of which the Secretary shall be one *ex officio*, all of whom shall be elected annually by ballot, and shall hold office until an election of successors.

ARTICLE IV.—LIFE MEMBERSHIP.

Any member who shall pay the Treasurer the sum of twenty-five dollars at one time shall become a Life Member, and shall be exempt from all future annual dues.

ARTICLE V.—AMENDING CONSTITUTION.

Every proposition to alter or amend this Constitution shall be submitted in writing and received at an annual meeting, and may be voted for at the next annual meeting, when, upon receiving a vote of three-fourths of the members present, it shall become a part of the Constitution.

The By-Laws may be altered or amended by a vote of three-fourths of the members present taken thereon.

BY-LAWS.

ARTICLE I.—Duties of Officers.

Section 1. The President shall preside at all meetings and administer the Rules of Order usual in deliberative assemblies. He shall nominate all special committees, except a majority of the members present resort to balloting or other means. He shall sign the certificates of membership and countersign all orders upon the Treasurer. He shall present at each annual meeting a report of the operations of the Association during the year, and suggest such subjects for its benefit as he may deem worthy of notice.

Sec. 2. The Vice-Presidents shall, in case of temporary absence or inability of the President to serve, perform his duties in the order of their names.

Sec. 3. The Secretary shall keep a fair and correct record of all the proceedings of the Association. He shall keep on file all papers and reports read. He shall be charged with all correspondence, and with the editing, publishing and distributing the proceedings of the Association, under the direction of the Executive Committee. He shall notify all members four weeks in advance of each annual meeting, and at each annual meeting render a report of the duties performed by him since the last annual meeting. He shall furnish the chairman of every special committee with a list of its members. He shall be *ex officio* a member of the Executive Committee.

Sec. 4. The Local Secretary shall act under instructions from the Secretary.

Sec. 5. The Treasurer shall collect and have charge of all funds of the Association. He shall give bond in the sum of one thousand dollars for the faithful performance of his duties. The bond must be acceptable to the Executive Committee and placed in the custody of the President, who shall deliver it to his successor. He shall hold and issue the certificates of membership. He shall report to the Executive Committee, previous to each annual meeting, the names of those members who have failed to pay their dues for two successive years. He shall keep a list of the names, residence and date of entrance of each member, and furnish a list of the same at the close of each annual meeting to the Secretary for publication. He shall preserve all applications for membership. He shall pay all bills when countersigned by the President, and at each annual meeting render an itemized statement of his accounts.

ARTICLE II.—Of Committees.

Section 1. There shall be three Standing Committees: An Executive Committee of five members, a Committee on Papers and Queries, and a Committee on Trade Interests, each to consist of three members, and to be annually elected or appointed, according to the will of the Association.

Sec. 2. The Executive Committee, of which the Secretary is an *ex officio* member, shall have charge of the revision of the roll, the investigation of applicants for membership, and the publication of the proceedings. They shall report at each annual meeting the names of such members who have refused to pay their annual dues for two successive years. They shall present appropriate notices of deceased members. At least one copy of the Annual Report of Proceedings, as published by the Executive Committee, shall be furnished each member.

Sec. 3. The Committee on Trade Interests shall consider all matters of a trade or commercial nature referred to them, and render a report thereon at such time as may be directed. They may make annual reports, and suggest remedies of such trade or commercial irregularities as they may deem worthy thereof.

Sec. 4. The Committee on Papers and Queries shall receive all papers or essays for the Association, and designate which of them shall be read at length and which by title. They shall, in connection with the Secretary, arrange the time which may be most appropriate and convenient for presenting them. They shall annually report, within three months after their selection, a proper number of questions of scientific and practical interest, the answers to which may advance the interests of pharmacy; and shall procure the acceptance of as many such questions for investigation and reply as may be practicable; and in other ways induce the presentation of papers and essays.

ARTICLE III.—Of Membership.

Section 1. Every pharmacist and druggist residing in the State, of good moral standing, who is registered or is eligible to registration as a Registered Pharmacist under the Pharmacy Act of this State, of which satisfactory evidence shall be produced or shown to the Executive Committee, may become a member of this Association.

Sec. 2. Any person eligible to membership may apply in writing with the endorsement of two members in good standing, to any member of the Executive Committee, who shall report his application to said Committee; if after investigating his claims, they shall approve his election, they shall, at the earliest time possible, report his name to the Association, and he may be elected by two-thirds vote of the members present on ballot.

Sec. 3. Any member, not in arrears, moving to another State and

once in two years reporting to the Secretary his address, shall be regarded as an associate of this Association, and it is hereby provided that such failure to report shall be sufficient warrant for the Secretary dropping the name of such associate member from the roll of membership. Associate members shall not be eligible to hold office nor be required to contribute to the funds of the Association, but they shall have the privilege of attending the meetings and participating in the deliberations.

Sec. 4. No person shall be considered a member of this Association until he has signed the Constitution and By-Laws and paid into the contribution for the current year. All persons who become members treasury the sum of one dollar as an initiation fee; also the annual shall be considered permanent members, but may be expelled for improper conduct by a vote of three-fourths of the members present at any annual meeting.

Sec. 5. Every member shall pay in advance into the hands of the Treasurer the sum of two dollars as his yearly contribution. Any one in arrears at an annual meeting shall not be entitled to vote, and any one neglecting to pay his annual dues for two successive years shall be liable to lose his membership. Members complying with the preceding section of this article are entitled to certificates of membership, signed by the President, a Vice-President, the Secretary and Treasurer. Ex-members, who are so from omission to pay their dues, desiring to re-unite with the Association, may do so by applying in writing to the Treasurer and paying into the funds of the Association the sum of two years' dues when they were members and the dues of the current year; whereupon their names shall be placed upon the roll.

Sec. 6. Resignations shall be made in writing to the Secretary, but no resignation shall be accepted from any one who is in arrears to the Treasurer. All resignations shall be acknowledged by the Secretary and reported at the next annual meeting.

Sec. 7. Pharmacists, chemists and other scientific men who may be deemed worthy of the distinction may be elected honorary members, and traveling salesmen and others connected with the drug trade may become associate members. They shall not be required to contribute to the funds, nor shall they be eligible to office, or to vote upon any question.

ARTICLE IV.—Of Meetings.

Section 1. The meetings shall be held annually, or from time to time, as the Association may determine, provided that in cases of failure of this from any cause, the duty of calling the Association together shall devolve upon the President, or on the Vice-Presidents, with the advice and consent of the Executive Committee.

Sec. 2. At the opening of each annual meeting, in the absence of

the President and Vice-President, one of the Executive Committee shall take the chair. In absence of all, a President *pro tempore* shall be elected by the members present. In the absence of the Secretary, the presiding officer shall appoint a Secretary *pro tempore.*

SEC. 3. Fifteen members shall constitute a quorum.

ARTICLE V.—OF DELEGATES.

SECTION 1. The President shall annually appoint five delegates to the American Pharmaceutical Association, and three to the Virginia Pharmaceutical Association, and three to the North Carolina State Medical Society. The delegates shall present their report at the next annual meeting of the Association. Delegates shall be entitled to appoint alternates.

ARTICLE VI.—BUSINESS ORDER.

1.—Calling Roll.
2.—Reading Minutes.
3.—Election of Members.
4.—Report of Officers.
5.—Miscellaneous Business.
6.—Reading Communications.
7.—Report of Committees.
8.—Election of Officers.
9.—Adjournment.

CODE OF ETHICS.

ADOPTED 1882.

The members of the North Carolina Pharmaceutical Association, considering it necessary that some mutual understanding should exist in regard to the moral principles guiding them in their profession, hereby agree upon the following Code of Ethics:

1. We accept the United States Pharmacopœia as our standard and guide for all official preparations, and recognize a variance from its rules only in exceptional cases where sufficient authority has proved some other process more reliable to attain the same end. (This section is not intended to interfere with the dispensing of preparations or medicines ordered in accordance with foreign pharmacopœias).

2. We discountenance all secret formulæ between physician and pharmacist, and consider it our duty to communicate such to each other when requested.

3. We distinctly repudiate the practice of allowing physicians a percentage in any form on their prescriptions or patronage, as being derogatory to both professions.

4. We will endeavor, as far as possible, to refrain from compromising the professional reputation of any physician, and expect in return the same courtesy from him.

5. As the apothecary should be able to distinguish between good and bad drugs in most cases, and as the substitution of a weak or inert drug for an active one may, negatively, be productive of serious consequences, we hold that the sale of impure drugs or medicines, from motives of competition or desire of gain, when pure articles of the same kind may be obtained, is highly culpable, and that it is the duty of every honest apothecary or druggist to expose all such fraudulent acts as may come to his knowledge.

6. The apothecary should be remunerated by the public for his knowledge and skill, and his charges should be regulated by the time consumed in preparing as well as by the value of the articles sold. Although local and other circumstances necessarily affect the rate of charges at different establishments, no apothecary should intentionally undersell his neighbors with a view to their injury.

7. Recognizing the value of alcohol as a therapeutic agent, and the propriety of its being dispensed as such by pharmacists, yet deploring the widespread evil resulting from its intemperate use in its hundred insidious forms, we condemn any attempt to make it a prominent feature of our business as unprofessional, and we denounce the loose practice of allowing it to be used on the premises in any shape as a beverage as degrading, and we urge upon pharmacists the duty of exercising at all times a conscientious care in dispensing a drug liable to such dangerous abuse.

8. Members of this Association, when asked to do so, shall give each other confidentially, any information in their possession affecting the character, habits, integrity or irregularities of any assistant or apprentice who may have applied for employment, or to whom they may have given letters of introduction or recommendation. Any member who shall divulge such confidential communication to the detriment or annoyance of the member giving it shall, upon the proof thereof, be no longer entitled to the courtesies due a member, and his name be stricken from the roll.

9. Believing that some means should be adopted to enforce the provisions of this Code, violations of the same may be reported at any annual meeting of this Association, when the accused may be heard in his own behalf, when, if found guilty, he may be censured, suspended or expelled by a vote of two-thirds of the members present.

NORTH CAROLINA BOARD OF PHARMACY.

MEMBERS AND ORGANIZATION, 1907-1908.

COMMISSIONED BY HIS EXCELLENCY THE GOVERNOR OF NORTH CAROLINA.

F. W. Hancock, Oxford.....Term expires April 28, 1909.
W. W. Horne, Fayetteville.....Term expires April 28, 1910.
Charles B. Miller, Goldsboro.....Term expires April 28, 1911.
E. V. Zoeller, Tarboro.....Term expires April 28, 1912.
C. D. Bradham, New Bern.....Term expires April 28, 1913.

PRESIDENT.

Edward V. Zoeller.....Tarboro.

SECRETARY AND TREASURER.

F. W. Hancock.....Oxford.

ATTORNEY.

B. S. Royster.....Oxford.

REPORT OF F. W. HANCOCK, SEC. AND TREAS. OF THE N. C. BOARD OF PHARMACY.

To His Excellency, Robert B. Glenn, Governor:

SIR:—As required by Section 9 of the North Carolina Pharmacy Law, I have the honor to transmit to your Excellency and to the North Carolina Pharmaceutical Association, the Twenty-sixth Annual Report of the North Carolina Board of Pharmacy for the year ending May 31, 1907.

The Sixty-sixth meeting of the Board was held at the Seashore Hotel, Wrightsville Beach, Tuesday and Wednesday, June 12 and 13, 1906, Messrs. E. V. Zoeller, C. D. Bradham, W. W. Horne, C. B. Miller, and F. W. Hancock being present.

Mr. C. B. Miller, of Goldsboro, presented his commission from the Governor as a member of the Board for a term of five years from April 28, 1906, and therefore entered upon the duties of said office.

The Secretary of the Board reported that copies of the Pharmacy Law had been sent to all the Judges and Solicitors of the State, and that their attention had been called to the changes in said law, and also to the sections of the Revisal of 1905 containing said law.

The Board ruled that all applicants taking the examinations in the future should furnish, with their application for examination, certificate of experience covering the required 36 months' experience.

The Attorney of the Board gave as his opinion that the sale of all strychnine tablets sold any other way at retail, except upon the prescription of a regularly licensed physician, should be recorded in the poison register. He gave as his further opinion that the experience of applicants for examination under a physician receiving a permit to practice pharmacy could not be counted as the experience or any part of the experience required under the act.

The Board ruled that the official census of the United States was always to be used when issuing permits to physicians, unless a more correct official census could be obtained.

Forty-eight (48) applicants appeared for examination, of whom twenty-nine (29) were successful, as follows:

C. B. Avent, Durham; Jens Berg, Southport; W. T. Beck, Southern Pines; Ludlow Birdsong, Raleigh; C. R. Bright, Washington; F. L. Costner, Gastonia; C. T. Council, Durham; J. S. Edwards, Lindell; C. M. Fox, Randleman; C. K. Hand, Lowell; J. A. Hart, Hendersonville; W. E. Haley (colored), Warrenton; W. H. Herring, Clinton; H. B. Hoyle, M. D., Jonesboro; W. P. McCraw, Littleton; W. M. McKinney, Washington; N. F. Marsh, Marshville; M. S. Morrison, Con-

cord; F. C. Parsons, Wadesboro; R. S. Parker, Wilkesboro; T. E. Person, Fremont; M. H. Reeves, Waynesville; P. P. Robinson, Franklin; I. W. Rose, Benson; I. A. Shade (colored), Asheville; H. A. Sheppard, Monroe; J. A. Suttle, Shelby; P. D. Thomas, Fayetteville; D. C. Yancey (colored), Greensboro.

The Sixty-seventh meeting of the Board was held in the Senate Chamber, in the City of Raleigh, Tuesday and Wednesday, November 20th and 21st, 1906. Present, Messrs. E. V. Zoeller, W. W. Horne, C. D. Bradham, C. B. Miller and F. W. Hancock.

The Attorney of the Board gave as his opinion that the Board did not have authority under the Pharmacy Law of 1905 to fix a list of non-poisonous domestic remedies. The Board thinking it would be wise for them to have such authority, agreed to ask the Legislative Committee to have the following amendments to the Pharmacy Law passed by the next Legislature: Amend Section 9 in second line, after the word "to," as follows, define and designate non-poisonous domestic remedies. The section amended would read as follows: That the Board of Pharmacy shall have a common seal, and shall have the power and authority to define and designate non-poisonous domestic remedies, etc.

Thirty-eight (38) candidates appeared at this meeting for examination, of whom eighteen (18) were successful. They were:

Miss Mabel Barnhill, Bethel; W. A. Brame, North Wilkesboro; Jefferson Bruce, Marshall; L. C. Cannon, Ayden; J. W. Coppedge, Greensboro; R. Y. Deitz, Newton; C. P. Greyer, Morganton; D. M. Gurley, Greensboro; W. A. Hall, Fayetteville; G. W. Hill, Wilmington; Reginald Hamlet, Raleigh; L. M. King, Greensboro; E. W. Martin, Wadesboro; Edwin Nowell, Greensboro; G. C. Robinson, Lincolnton; D. W. Tart, Dunn; H. E. Thrower, Weldon; J. R. Trotter, Reidsville.

In accordance with Section 4 of the Pharmacy Law, permits to conduct drug stores in towns of less than five hundred inhabitants have been issued to the following physicians:

Dr. Richard Nuckolls Littlejohn, Whittier, Swain County; Dr. Lloyd Pecemas Russell, Arden, Buncombe County; Dr. George Andrew Hood, Kenly, Johnson County; Dr. Carl Whit Sutton, Richlands, Onslow County; Dr. Solomon Spainhour Flynt, Rural Hall, Forsyth County; Dr. Mott Parks Blair, Marshville, Union County; Dr. James Henry Harper, Snow Hill, Greene County; Dr. Arthur Wesley Greene, Ahoskie, Hertford County; Dr. Thomas Greenberry Cooksey, Saluda, Polk County; Dr. Charles Pender Edwards, Burnsville, Yancey County; Dr. Ginnada Thomas Sikes, Creedmoor, Granville County; Dr. James Henry Teague, Whittier, Swain County.

Duplicate certificates have been issued to the following:

Robert Williamson Gray, Charlotte; Ransom Spain Gray, Charlotte; Addie Howard Boyette, Smithfield; Henry Caldwell Ashcraft,

Mount Airy; John Thomas Howell, Kenley; Duncan Isham Watson, M. D., Southport.

The following towns have been visited and inspections made therein since I made my last report:

Sanford, Jonesboro, Greensboro, Winston-Salem, Fayetteville, Hope Mills, Dunn, Southport, Greensboro, Wilkesboro, North Wilkesboro, Elkin, Rural Hall, Pilot Mountain, Mount Airy, Salisbury, Concord, Thomasville, Spencer, Charlotte, Henderson, Louisburg, Franklinton, Wake Forest, Raleigh, Huntersville, Cornelius, Davidson, Lincolnton, Shelby, Cherryville, Gastonia, King's Mountain, Bessemer City, Dallas, Mount Holly, Stanly, New Bern, Kinston, La Grange, Wilson, Lucama, Kenly, Benson, Clinton, Warsaw, Magnolia, Lumberton, Burgaw, Snow Hill, Greenville, Ayden, Winterville, Laurinburg, Maxton, Hamlet, Southern Pines, Rockingham, Wadesboro, Monroe, Marshville, Reidsville, Warrenton, Littleton, Weldon, Jackson, Enfield, Halifax, Scotland Neck, Rocky Mount, Williamston, Plymouth, Elizabeth City, Edenton, Burlington, Hertford, Mebane, Hillsboro, Liberty, Siler City, Ore Hill, Gulf, High Point, Lexington, China Grove, Albemarle, Norwood, Mount Gilead, Mooresboro, Latimore, Dallas, Forest City, Mount Holly, Raleigh, Durham, Cary, Goldsboro, Mount Olive, Garner, Clayton, Selma, Smithfield, Apex, Moncure, Pittsboro, Carthage, Pinehurst, Aberdeen, Duke, Kittrell, Creedmoor, Statesville, Taylorsville, Mooresville, Troutman, Mocksville, Newton, Maiden, Claremont, Conover, Hickory, Lenoir, Morganton, Marion, Old Fort, Matthews, Waxhaw, Polkton, Gibson, Belmont, Lowell, Grover, Stanly, Madison, Chapel Hill.

This has been, as you are no doubt aware, the legislative year. Whenever this is the case, your Secretary, as has been his custom for years, attends the sessions of that body, that he may watch very closely the transactions of the same. During the entire session he is always in Raleigh or near there. This is done that he may look after the enacting into law of such matters as may be adopted by the Association, and further, to use his efforts, in having defeated such bills as might come up that could be hurtful to the best interest of pharmacy. I am glad to report that the amendment to the Pharmacy Law, giving the Board of Pharmacy authority to define and designate what are non-poisonous domestic remedies, successfully passed, and is now a law. This will enable our Board to fix a list of just such household remedies as they, in their judgment, may think best, that the general dealer should handle.

For information regarding other bills before the Legislature, I respectfully refer you to the report of the Legislative Committee.

No prosecutions have been made since my last report. At the last meeting of the Board I felt sure that some would have to be made before now, but by the assistance of our able attorney they were satisfactorily adjusted. We have gone very slowly, and I think wisely

so, in correcting and adjusting most of our violations, without having to resort to the courts. Of course, to do this has required patience and leniency on our part and frequent visitations. One great trouble with quite a number of those who have violated the law has been not that they had a desire or wished to violate the law—in fact, they are anxious to comply with its requirements. They just couldn't get registered clerks for the places. The demand for them was far in excess of the supply. In the smaller towns, where registered clerks are very much needed, it is just almost impossible to get them. When they become registered and licensed, they don't want to go to these small places, although quite a number of them were raised in just such places. Now the reason, I think, for this is that the salaries paid in the larger places are higher, as the business of course justifies it. Therefore, on this account, and on account of other conditions, we think the course we have pursued in going slow was a wise one. However, there are a few places in the State where these are not the conditions, and I feel that the time has now come when they should be indicted in our courts. By the next meeting of the Association, I feel sure that there are several cases that will have to be put into the courts and I hope that I will be able to report to you that we have been successful in winning them.

You will notice in the new Anti-Narcotic Law that it will be the duty of the Board of Pharmacy to cause the prosecution of all persons violating the provisions of that act. You will also notice further that in the amendment to our law, the Board of Pharmacy is given authority to fix list for household remedies for the general trade. These will increase to a very large extent the duties of the inspector.

I hope you will read carefully, when printed, this report, for it is the best report in every way that has been made in the history of the North Carolina Board of Pharmacy.

The following named registered pharmacists, thirty (30) in number, failing to comply with Section 19 of the Pharmacy Law by not renewing their license as required by said section, their names were removed from the register as the law required:

Willis Alston, M. D. ..... Littleton
H. P. Bowman, M. D. ..... Gibsonville
B. L. Cole ..... Weldon
Chas. Z. Caudler, M. D. ..... Dillsboro
S. P. Fletcher ..... Harrisonburg, Va.
J. C. Grady, M. D. ..... Kenly
C. E. Gallaway ..... Mount Airy
W. H. Harwood ..... Apex
J. A. Hardison ..... Wadesboro
H. M. Harper ..... Richmond, Va.
F. D. Irvin ..... Reidsville
C. E. Jordan, M. D. ..... Gibsonville

W. A. Monroe, M. D.....Sanford
H. M. McNatt, M. D.....Maxton
W. H. Nicholson.....Hickory
J. E. Patrick, M. D.....Snow Hill
William Rogers.....Asheville
J. C. Ray.....Richmond, Va.
Odell Southerland.....Charlotte
W. G. Stribling.....Anderson, S. C.
E. D. Springer.....South Creek
W. O. Singletary.....Ashpole
W. M. Strong, M. D.....Belmont
J. K. Thigpen.....Tarboro
T. D. Tyson, M. D.....Mebane
W. H. Vick (colored).....Wilson
W. M. Wilson, Jr.....Charlotte
T. D. Webb.....Morehead City
W. H. Ward, M. D.....Plymouth
E. E. Walker, M. D.....Snow Hill

The following named physicians, living in towns of less than 500 inhabitants, to whom were issued permits to conduct drug stores, failing to renew said permits as required in Section 19 of the Pharmacy Law, their names were removed from the register, as the law requires:

Dr. Oscar F. Smith.....Magnolia, Duplin County
Dr. Napoleon P. Mariner.....Belhaven, Beaufort County

The following names have been removed from the register on account of death:

W. H. King, Raleigh; Josiah Suggs, M. D., Kittrell; W. W. Griggs, M. D., Elizabeth City; C. L. Thompson, Salisbury; F. L. Taylor, Oxford; J. B. Isenhour, Salisbury; L. B. Allison, Morganton; J. A. Sykes, Greensboro; L. R. Wriston, Charlotte.

Number of physicians holding permits and failing to renew same, whose names were removed from register..... 2
Number of deaths from registered list..... 9
Number of names of licensed pharmacists removed from register for failing to renew license..... 30
Number of candidates examined and passed the Board..... 86
Number of physicians to whom permits were issued..... 12
Total number of physicians holding permits and registered..... 27
Total number of registered pharmacists.....687

I submit herewith report of the receipts and the disbursements for the current year, as follows:

F. W. Hancock, Secretary and Treasurer of the North Carolina Board o Pharmacy:

1906.		Dr.	
June 1.	By balance on hand	$	218 66
12.	By cash received from candidates examined		240 00
Aug. 30.	By cash received from N. C. Phar. Association		150 00
Nov. 20.	By cash received from candidates examined		190 00
1907.			
May 31.	By cash received from renewals		1,490 00
31.	By cash received from physicians' permits		36 00
31.	By cash received from duplicate certificates		6 00
			$2,330 66

1906.		Cr.	
June 18.	To amount paid Wilm. Fur. Co., rent of tables, etc.	$	15 00
20.	To amount paid C. B. Miller, exp. board meeting		22 45
20.	To amount paid E. V. Zoeller, exp. board meeting		31 75
20.	To amount paid W. W. Horne, exp. board meeting		22 22
20.	To amount paid C. D. Bradham, exp. board meeting		28 67
20.	To amount paid F. W. Hancock, exp. board meeting		29 00
20.	To amount paid C. F. Clayton, printing		3 50
July 3.	To amount paid So. Ex. Co., account		25
3.	To amount paid So. Ex. Co., account		65
11.	To amount paid So. Ex. Co., account		25
24.	To amount paid Oxford Postoffice, postage		10 00
31.	To amount paid Oxford Pub Ledger, acc't printing		3 75
Aug. 11.	To amount paid So. Ex. Co., account		35
Sept. 5.	To amount paid Oxford Pub. Ledger, printing		3 75
6.	To amount paid W. T. Terry, acc't rubber stamps		1 65
10.	To amount paid Miss B. H. Gregory, typewriting		2 75
10.	To amount paid Oxford Postoffice, stamps		15 00
20.	To amount paid Oxford Postoffice, stamps		15 00
Oct. 23.	To amount paid W. H. Harrison, renewing bond		4 00
Nov. 5.	To amount paid Oxford Pub. Ledger, printing		1 75
5.	To amount paid News and Observer, print'g notice		3 00
5.	To amount paid Oxford Postoffice, stamps		10 00
17.	To amount paid R. L. Hamilton, acc't stationery		2 30
19.	To amount paid Bank of Granville, exchange		4 65
19.	To amount paid Gen. B. S. Royster, attorney fee		25 00
19.	To amount paid Edwards & Broughton, acc't p't'g		5 75
19.	To amount paid Alfred Williams & Co., stationery		1 85
20.	To amount paid W. D. Terry, janitor capitol		5 00
22.	To amount paid E. M. Uzzell, printing		21 75
24.	To amount paid So. Ex. Co., account		1 00
25.	To amount paid E. V. Zoeller, exp. board meeting		24 10
25.	To amount paid C. D. Bradham, exp. board meeting		23 10
25.	To amount paid F. W. Hancock, exp. board meeting		20 00
26.	To amount paid W. W. Horne, exp. board meeting		20 34

Nov. 26.	To amount paid C. B. Miller, exp. board meeting....	13 40
Dec. 1.	To amount paid C. F. Clayton, account printing.....	3 50
1.	To amount paid Marcus W. Wolf Co., ex. books.....	1 50
10.	To amount paid So. Ex. Co., account.....	25
10.	To amount paid Oxford Pub. Ledger, printing.....	1 25
1907.		
Feb. 1.	To amount paid Oxford Postoffice, stamps.....	12 40
9.	To amount paid Oxford Pub. Ledger, acc't printing	2 00
Mar. 1.	To amount paid So. Ex. Co., account.....	90
Apr. 6.	To amount paid Oxford Pub. Ledger, printing.....	2 25
8.	To amount paid Oxford Postoffice, stamps.....	6 00
12.	To amount paid Miss B. H. Gregory, typewriting...	2 75
May 6.	To amount paid So. Ex. Co., account.....	50
6.	To amount paid Public Ledger, account printing....	1 50
15.	To amount paid Oxford Postoffice, postage.....	8 00
31.	To amount paid for travelling expenses of Inspector for June, 1906.....	46 70
31.	To amount paid for travelling expenses of Inspector for July, 1906.....	37 90
31.	To amount paid for travelling expenses of Inspector for August, 1906.....	38 75
31.	To amount paid for travelling expenses of Inspector for September, 1906.....	53 25
31.	To amount paid for travelling expenses of Inspector for October, 1906.....	36 25
31.	To amount paid for travelling expenses of Inspector for November, 1906.....	47 75
31.	To amount paid for travelling expenses of Inspector for December, 1906.....	44 50
31.	To amount paid for travelling expenses of Inspector for January, 1907.....	43 00
31.	To amount paid for travelling expenses of Inspector for February, 1907.....	51 00
31.	To amount paid for travelling expenses of Inspector for March, 1907.....	35 80
31.	To amount paid for travelling expenses of Inspector for April, 1907.....	44 30
31.	To amount paid for travelling expenses of Inspector for May, 1907.....	45 05
31.	To amount paid F. W. Hancock, salary as Secretary and Treasurer for year ending May 31, 1907...	360 00
31.	To amount paid F. W. Hancock, per diem as Inspector for year ending May 31, 1907.....	810 00
June 1.	By balance on hand.....	200 63
		$2,330 66

Respectfully submitted,

F. W. Hancock,

Secretary and Treasurer.

NORTH CAROLINA BOARD OF PHARMACY.

BY-LAWS.

The annual meeting shall be held on Tuesdays of the week in which the North Carolina Pharmaceutical Association holds its annual meeting and in the same place. Other regular meetings shall be held at such times and places as are chosen at any of these meetings

Special meetings may be held when called by the President, or on written request of three members of the Board at such times and places as may be stated in the call. At special meetings, only the business stated in the call shall be considered.

The officers of the Board shall consist of a President and a Secretary-Treasurer. The terms of these officers shall run through the period of their membership of the Board, unless the Board should desire to end the terms of either or both sooner.

The President shall have general supervision of the business and examinations, and with the Secretary-Treasurer shall report at every regular meeting the matters that have had attention since the last meeting.

The Secretary-Treasurer shall be the executive officer to perform such duties as are imposed on him by the Pharmacy Act, and such others as the Board may from time to time direct. At every regular meeting he shall furnish a detailed statement of all receipts and expenditures for approval, and at each annual meeting a complete financial statement of the past fiscal year's business. He shall furnish bond in an approved surety company for one thousand dollars, the premiums to be paid by the Board, for the faithful collection and disbursing of all funds coming into and passing from his hands. The bond should be filed with and remain in the custody of the President. He shall be the custodian of the books and papers of the Board, and at each annual meeting present an inventory of all the property in his care. This responsibility of a Secretary-Treasurer going out of office shall not be ended until he shall present to the Board a receipt from his successor for said property.

No By-Law or Rule of the Board shall be added, changed or suspended without the concurrence of three members at a regular meeting.

BUSINESS ORDER.

Roll call and *pro tem* appointments.
Reading and approving minutes.
Miscellaneous communications.
Reports of officers and committees.
Special orders.
Unfinished business.
New business.
Choosing place and time of next meeting.
Adjournment.

RULES FOR THE GOVERNMENT OF THE NORTH CAROLINA BOARD OF PHARMACY.

Examinations shall be mainly written and divided under three heads, namely:

1. Materia Medica, Posology, and Toxicology, with identification of vegetable and animal drugs.

2. Practice of Pharmacy, including prescription criticism and reading, with identification of galenicals.

3. Pharmaceutical Chemistry, with identification of chemicals.

Written questions shall be arranged as nearly as practicable into ten main questions under each head, with sub-questions.

For the purpose of grading or rating, answers to questions shall be valued by marks or points based on their importance, as determined by the judgment of the examiner.

A general average of seventy-five per cent, with not less than fifty per cent under any head or department, shall be required to pass.

No application for registration, license or permit, shall be considered, unless made out, and duly sworn to, upon the official form of the Board, and accompanied by the required fee.

RESOLUTIONS DEFINING A REPUTABLE SCHOOL OR COLLEGE OF PHARMACY, ADOPTED BY THE NORTH CAROLINA BOARD OF PHARMACY.

Resolved, That it is the sense and ruling of this Board for the purpose of allowing for attendance in reputable schools and colleges of pharmacy as part of the three years' experience required in pharmacy of applicants for license, that such institutions shall:

1. Be incorporated as a college or school of pharmacy, or be a department of a regularly incorporated educational institution, or a department of a State University, or conducted by an incorporated pharmaceutical society.

2. That the institution shall include in its course of instruction oral lectures, personal laboratory work, recitations and reviews. This shall exclude work in absentia.

3. That the institution shall require of each candidate for graduation not less than 500 hours given to lectures and recitations, and not less than 600 hours of laboratory work, such work to be given in a period of not less than forty weeks.

EXAMINATION

Held at Lake Toxaway, June 11, 1907.

The following is published in order to show the scope and grade of examinations of the Board.

In order to pass, a general average of 75 per cent, with a minimum limit of 50 per cent in any of three branches, is required.

The examinations require a day's time, conducted at two sittings.

RULES GOVERNING THE EXAMINATIONS.

No candidate is allowed to communicate in any way with another. Answer the questions by number, and where there are subdivisions start each on a new line. Proportionate credit will be allowed for partial answers.

Incorrect spelling or grammar and bad handwriting will detract from final rating. Three hours' time is allotted in which to complete the examination, under each branch.

MATERIA MEDICA, TOXICOLOGY, AND POSOLOGY.

1. *Aloe.*—Give official name. Habitat. Varieties. Adulterants. Medical Properties. Dose. Name its principal active ingredient and average dose.

2. *Santonin.*—Give official name and part of plant from which obtained. Habitat. Dose. Write a prescription for a one-year-old child, in which Santonin shall be one of the ingredients, giving usual directions in such cases.

3. *Opium.*—Give source and how obtained. Describe the drug as seen in commerce. Adulterants. Name the official preparations with their doses. Name the official salts of its alkaloids with their doses. Write a prescription to contain one of these salts together with three other ingredients for a cough syrup, giving adult dose of same.

4. *Rhubarb.*—Give official name. Part used. Habitat. Medical properties. Dose. From what country is the best quality of this drug obtained? Name its preparations and their doses.

5. *Aconite.*—Give official name. Part used. Habitat. Dose. What effect upon tongue and mouth when tasted? Antidote against poisoning. Give official preparations with doses.

6. Give in a plain, practical way your definition of the following terms:

Antiseptic, Mydriatic, Aphrodisiac, Emetic, Migraine, Germicide, Narcotic, Soporific, Hæmostatic, Febrifuge.

7. Give the official Latin names of the following:

Calomel, Fox Glove, Larkspur, Witchhazel, Blue Flag, Yellow Jasmine, Wintergreen, Licorice, Black Cohosh, Pennyroyal, Dandelion, Prickly Ash, Hemlock, Indian Hemp.

8. Give the common English names of the following:

Hydrastis Canadensis, Aspidium Filix-mas, Phytolacca Decandra, Leptandra, Rhamnus Purshiana, Sanguinaria, Prunus Virginiana, Ol. Caryophilus, Convallaria Majalis, Ol. Tiglii.

9. Give the antidotes to the following poisons:

Sugar of Lead, Prussic Acid, Carbolic Acid, Lye, Arsenic, Chloroform, Paris Green, Laudanum.

10. What are the requirements of the State Anti-Narcotic Law about habit-forming drugs, and of the Pharmacy Act regarding the sale of poisons.

11. Recognize specimens.

PHARMACEUTICAL CHEMISTRY.

1. Which of the following are permanent in air?

Zinc Sulphate, Lead Acetate, Potassium Bicarbonate, Potassium Bitartrate, Potassium Acetate, Sodium Sulphate.

2. State what you know as to the solubility of the following in alcohol and in water:

Sodium Thiosulphate, Pepsin, Menthol, Acetanilid, Chloral, Resorcinol, Potassium Bromide, Phenyl Salicylate, Acetphenetidin, Quinine Sulphate.

3. What occurs when Arsenic Trioxide, Potassium Bicarbonate, and water are boiled together? When Lead Oxide is boiled with a solution of Lead Acetate, what new compound is formed?

4. How is Methyl Alcohol obtained? By what other names is it known?

5. What takes place when each of the following is heated?

Ammonium Carbonate, Ferrous Sulphate, Calcium Carbonate, Sal Tartar, Acetic Acid, Potassium Chlorate.

6. To what class of compounds does each of the following belong: Caffeine, Glycerin. How could you distinguish Caffeine from Morphine? What is the effect when Lime Water is added gradually and finally in excess to a solution of Morphine Sulphate? From what and how is Glycerin obtained?

7. Given Bicarbonate of Soda and Sulphur mixed together how could you separate them? How could you distinguish chemically between precipitated Calcium Carbonate and Powdered Talc?

8. How, chemically, can the two official Chlorides of Mercury be distinguished? What is the difference, if any, between Yellow, Green, Red, and Proto-iodides of Mercury? What is formed when Mercuric Chloride is treated with Lime Water?

9. From what is Phenol obtained? What is Phenol Liquefactum? What compound of Phenol with Salicylic Acid is official and what is its solubility?

10. In preparing each of the following what substances react and what new products are formed?

Ferric Hydroxide, Precipitated Sulphur, Lead Plaster, Liquor Potassii Citratis, Massa Ferri Carbonatis, Black Wash, Liquor Magnesii Citratis, Syrup of Iron Iodide.

11. Identify specimens.

PHARMACY.

1. Explain the difference between a Dispensatory, the U. S. Pharmacopœia and National Formulary. State how the latter two works are compiled and by what authority. For what reason have they of late become of very much more general and national importance?

2. Convert 5 Troy ounces into Avoirdupois. Three Avoirdupois ounces into Troy. What are the equivalents of each in the metric system?

3. How many fluid ounces in 400 Cc.? How many Cc. in half a pint? How many Minims in 10 Cc.?

4. How many grains of Homatropine Hydrobromide must be taken to make 2 fluid drams of a 2 per cent solution? How many grains of Corrosive Sublimate are in a Liter of one 2000th solution?

5. Name several common solvents. Explain the difference between simple, chemical, and saturated solutions. Give examples of U. S. P. VIII. preparations of each class of solution.

6. By what instrument can the strength of Alcohol and the liquid Acids be quickly determined? Give percentage strengths of several. Name five drugs and their active constituents for which the U. S. P. VIII. gives assay processes.

7. What important changes in strength has the U. S. P. VIII. made in Tinctures of Aconite and Veratrum? In Syrup of Ferrous Iodide?

8. What is meant by an impalpable Powder and how are substances gotten in this state? Give examples where this condition is important and state why.

9. How does the U. S. P. direct the following to be cared for and what deterioration results if not observed?

Ammonii Carbonas, Aqua Hydrogenii Dioxidi, Liquor Formaldehydi, Potassii Hydroxidum, Santoninum.

10. Name ingredients and outline U. S. P. VIII. process of making: Acidum Sulphuricum Aromaticum, Medicated Waters, Emulsum Olei Terebinthinæ, Mistura Glycyrrhizæ Comp., Mucilago Acaciæ, Spiritus Ammoniæ Aromat., Syrupus Tolu, Tinctura Opii, Tinctura Gentianæ Comp., Ungt. Belladonnæ.

11. Identify specimens.

Criticise minutely the following: As to dosage, incompatibilities, and methods of compounding:

PRESCRIPTION No. 1.

Hydrargyri Bichloridi Sodii Bicarb., aa grs. xii.
M. et ft. chart. No. X.
Sig.—One every two hours.

PRESCRIPTION No. 2.

Tinct. Ferri Chloridi fld. drs. ii.
Acid Carbolici fld. ozs. ii.
Glycerini fld. ozs. ii.
Potass. Chloridi drs. iv.
Aquæ qs. ad. fld. ozs. iv.
M. Sig.—Gargle.

PRESCRIPTION No. 3.

Tinct. Aconiti fld. drs. i.
Tinct. Digital. fld. drs. ii.
Tinct. Nucis Vom. fld. drs. v.
Spts. Aeth. Nitrosi fld. ozs. i.
M. Sig—Gutt xx in water, g. h. s.

PRESCRIPTION No. 4.

Antimonii et Potass. Tartrate grs. xx.
Sacchar Lactis grs. xx.
M. Ft. Chart. No. xii.
Sig.—One every hour.

SPECIMENS IDENTIFIED.

Materia Medica.—Five specimens of vegetable and animal drugs.
Pharmacy.—Five galenical specimens.
Chemistry.—Five specimens of chemicals.
Two (2) minutes are given to each specimen. Thirty minutes to all three branches.

LIST OF REGISTERED PHARMACISTS IN NORTH CAROLINA, REVISED SEPT. 1, 1907.

Please Report Any Errors or Omissions in This List or Any Change in Address.

A

No. Cert.	Name.	Address.
1	Atkinson, John M	Charlotte
2	Allison, Thomas B	Brevard
3	Adams, John L	Gastonia
4	Ashford, Alfred J	Kinston
5	Abernethy, T. R	Newton
6	Adams, D. L	Raleigh
7	Aldhiser, Henry H	Broadway, Va.
8	Allen, Wm. S	Reidsville
9	Anderson, W. S., M. D	Wilson
10	Ashcraft, H. C	Mount Airy
11	Allen, James, M. D	Wendell
12	Armfield, Horace	Albemarle
13	Austin, T. E	Roxboro
14	Avent, Clyde Benjamin	Louisburg
15	Amis, J. Taylor	Brevard
16	Atkins, Donah J	Durham
17	Abernethy, Joseph T	Gastonia
18	Andrews, Charles M	Newton
19	Abernethy, Joseph G	Lenoir

B

20	Baldwin, Penrose	Asheville
21	Bullock, Thos. C., M. D	Autryville
22	Benson, James W	Benson
23	Bradley, Augustus	Burlington

No. Cert.	Name.	Address.
24	Barrett, A. F.	Burlington
25	Burwell, W. R.	Charlotte
26	Blair, R. Kent	Charlotte
27	Brantly, John C.	Raleigh
28	Bernard, Germain	Durham
29	Beavans, Wm. E.	Enfield
30	Barker, Walter B.	Greensboro
31	Bryan, J. W.	Greenville
32	Beck, Robt. T.	Germanton
33	Brooks, J. F.	Hendersonville
34	Brown, John N.	Halifax
35	Ballew, James G.	Lenoir
36	Blue, Alfred F.	Laurinburg
37	Boddie, Samuel P.	Louisburg
38	Ballance, Jesse R.	Chadbourn
39	Brame, Robt. M.	North Wilkesboro
40	Bradham, C. D.	New Bern
41	Butler, R. F.	New Bern
42	Berry, W. A.	North Wilkesboro
43	Bobbitt, J. Hal	Baltimore
44	Birdsong, Edward G.	Raleigh
45	Brandon, N. C.	Yanceyville
46	Bolton, J. C.	Rich Square
47	Biggs, Sylvester	Hamlet
48	Betts, James R.	New Bern
49	Barker, C. R.	Salisbury
50	Barker, William R.	East Durham
51	Boyett, A. H.	Smithfield
52	Burwell, Geo. E.	Rocky Mount
53	Bellamy, Robt. R.	Wilmington
54	Bunting, J. Hicks	Wilmington
55	Brown, W. C.	Winston-Salem
56	Bell, Geo. M., M. D.	Wakefield
57	Barham, W. K.	New Bern
58	Blount, W. A., M. D.	Washington

No. Cert.	Name.	Address.
59	Biggs, S. R.	Williamston
60	Bryan, John S.	Albemarle
61	Blair, S. Oscar	Monroe
62	Braswell, Jas. C., M. D.	Whitakers
63	Bullock, D. A.	Wilmington
64	Barnes, Ben S.	Maxton
65	Bogue, A. G.	Fremont
66	Blake, James H.	Charlotte
67	Byrd, Clement	Littleton
68	Bateman, Walter C.	Wilson
69	Blauvelt, William H.	Asheville
70	Boon, Wiley J.	Raleigh
71	Bryan, William Dempsy	Tarboro
72	Brown, Benjamin W.	Elizabeth City
73	Brittain, George W.	Reidsville
74	Brown, James D.	Goldsboro
75	Boone, D. L.	Durham
76	Baucom, Alfred V.	Apex
77	Betts, Benjamin A.	Raleigh
78	Biggs, Warren H.	Williamston
79	Burton, Junius E.	High Point
80	Barkley, Dennis E.	Franklinton
81	Bell, Hollie M.	Windsor
82	Buhmann, Walter	Greensboro
83	Bogart, Malcolm N.	Washington
84	Birdsong, Ludlow	Raleigh
85	Berg, Jens	Southport
86	Bright, Christopher Robert	Washington
87	Beck, William Thomas	Southern Pines
88	Bruce, Jefferson	Marshall
89	Brame, Wm. Anderson	North Wilkesboro
90	Barnhill, Miss Mabel	Bethel

C

No. Cert.	Name.	Address.
91	Carmichael, W. C.	Asheville
92	Carter, Jesse	Aberdeen
93	Campbell, G. W.	Charlotte
94	Cranmer, John B., M. D.	Wilmington
95	Cole, J. F.	Carthage
96	Clapp, Clarence	China Grove
97	Carpenter, Frank L.	King's Mountain
98	Crabtree, Clarence A.	East Durham
99	Cook, A. J.	Fayetteville
100	Conway, C. W.	Franklinton
101	Carpenter, Robt. E.	Stanly
102	Conyers, Z. V.	Greensboro
103	Cavis, Chas. H.	Gastonia
104	Cate, A. S.	Greensboro
105	Crocker, W. D., M. D.	Lucama
106	Croom, Robt. DeVane	Maxton
107	Congdon, G. G.	Newport News, Va.
108	Carter, E. R., Jr. (colored	Henderson
109	Crowell, Chas. Bruton	Raleigh
110	Cook, R. E. L.	Tarboro
111	Cannady, Wm. A.	Swansboro
112	Cooper, H. S. S.	Weldon
113	Cohen, W. M.	Weldon
114	Crowell, Charles Bruce	Forest City
115	Cook, Walter M.	Salisbury
116	Cooke, Harry M.	Spencer
117	Cox, B. T., M. D.	Winterville
118	Cutchin, James McK., Jr.	Whitakers
119	Cardwell, Geo. W., M. D. (col.)	Elizabeth City
120	Chapin, Ansil B., M. D.	Beaufort
121	Crabtree, Gilbert	Raleigh
122	Crews, Eugene T.	Oxford
123	Carpenter, Oscar B.	Stanly
124	Carter, Samuel	Salisbury

No. Cert.	Name.	Address.
125	Cates, Claude H.	High Point
126	Cooke, Ernest S.	Fayetteville
127	Costner, Frank Leslie	Gastonia
128	Council, Commodore Thomas	Durham
129	Coppedge, James William	Greensboro
130	Cannon, Claudius Lillington.	Morehead City
131	Chapman, David Simeon	Greenville
132	Currie, Angus D.	Salisbury
133	Corden, John G. M.	Tarboro

D

134	Davis, George, M. D.	Beaufort
135	Dunn, R. A.	Charlotte
136	Dodson, J. A. (colored)	Durham
137	Dawson, W. W., M. D.	Grifton
138	Dorsey, Melville	Henderson
139	Dunn, Henry	Kinston
140	Dees, Wm. A., M. D.	Marshville
141	Duffy, Francis S.	New Bern
142	Davis, David R.	New Bern
143	Duffy, Leinster, M. D.	New Bern
144	Davis, J. E.	Raleigh
145	Daniel, F. L. (colored)	Salisbury
146	Davis, R. L., M. D.	Bryson City
147	Dew, S. B., M. D.	Spring Hope
148	Duke, J. W.	Youngsville
149	Dixon, Robt. L.	Milton
150	Daniel, Oscar C., M. D.	Oriental
151	Detter, Eli E.	Bessemer City
152	Daskum, E. E.	Waterbury, Conn.
153	Davenport, Peter E.	Plymouth
154	Dickinson, Albert P., M. D.	Raeford
155	Douglas, Junius D. (colored)	Rocky Mount
156	Davis, B. Swift.	Charlotte
157	Davis, Edward M.	Roxboro

No. Cert.	Name.	Address.
158	Deitz, Ralph Yount	Statesville
159	Davis, Isaiah Iverson, Jr.	Morganton

E

160	Eagles, John L. (colored)	Charlotte
161	Edwards, Thomas N.	Charlotte
162	Eubanks, Clyde L.	Chapel Hill
163	Ellington, Cope W.	Raleigh
164	Ernul, McG.	Greenville
165	Etheridge, John Q.	Elizabeth City
166	Eubanks, Harry H.	Hendersonville
167	Edwards, G. C., M. D.	Hookerton
168	Everington, Geo. D., M. D.	Laurinburg
169	English, F. S.	Charlotte
170	Eley, Henry S.	Suffolk, Va.
171	Eldridge, Julius	Winston-Salem
172	Ellington, Richard A.	Madison
173	Ellis, Orren L., M. D.	Louisburg
174	Eaton, John H. (colored)	Winston-Salem
175	Edwards, James Sidney	Wilson
176	Eldridge, Chauncey Terry	Greensboro
177	Elliott, Augustus Green	Durham

F

178	Fox, Ludolph G.	Rockingham
179	Freeman, R. A., M. D.	Burlington
180	Franklin, Orren E.	Mount Olive
181	Furman, Henry S.	Franklinton
182	Fordham, C. C.	Greensboro
183	Farries, Francis W.	Goldsboro
184	Few, Vernon	Hendersonville
185	Fields, W. L.	Norfolk, Va.
186	Fields, James T.	Laurinburg
187	Freeze, Rufus P.	Newton
188	Fetzer, Charles	Reidsville

No. Cert.	Name.	Address.
189	Fentress, Herbert L.	Wilmington
190	Field, D. Meade	Washington
191	Fisher, Henry A. (colored)	Charlotte
192	Fisher, Dr. E. D.	Richmond, Va.
193	Farrow, Thos. Landon, Jr.	Winston-Salem
194	Fuller, John Wiley (colored)	Salisbury

G

195	Garrison, David A., M. D.	Bessemer City
196	Goodman, Andy B., M. D.	Crescent
197	Gray, Ransom S.	Charlotte
198	Gray, Robt. W.	Charlotte
199	Gregory, Richard T.	Stovall
200	Goodman, Joseph F.	Concord
201	Griffin, Jas. A., M. D.	Clayton
202	Grantham, Geo. K.	Dunn
203	Gardner, Howard	Greensboro
204	Goodman, Geo. C.	Mooresville
205	Galloway, Rawley	Greensboro
206	Grantham, Hiram	Red Springs
207	Grimes, T. W.	Salisbury
208	Gardner, J. T.	Shelby
209	Goelet, Edward B., M. D.	Saluda
210	Grissom, R. Gilliam	Spray
211	Green, Wm. H.	Wilmington
212	Green, Chas. F.	Wilmington
213	Gallagher, Jas. M.	Washington
214	Grove, Charles E.	Biltmore
215	Gray, Polk C.	Statesville
216	Graham, Geo. A., M. D.	Raeford
217	Greene, John G.	High Point
218	Gibson, William Z.	Gibson
219	Gorham, Richard S.	Rocky Mount
220	Griffin, Leonidas C.	Charlotte
221	Grantham, Richard I.	Winston-Salem

No. Cert.	Name.	Address.
222	Gilbert, Loamie	Benson
223	Gibson, Eliza G	Maxton
224	Gurley, Doyle Manly	Sanford
225	Greyer, Charles Peyton	Morganton

H

226	Houston, J. L	Charlotte
227	Hunter, A. B	Apex
228	Hunter, Jas. E.,	Brinkleyville
229	Hawley, F. O., Jr	Charlotte
230	Hasty, Edward T. (colored)	Monroe
231	Henderson, James A	Charlotte
232	Hughes, C. M., M. D	Cedar Grove
233	Holliday, Robt. W	Clinton
234	Howell, Prof. E. V	Chapel Hill
235	Hood, D. H	Dunn
236	Hood, Nathan B	Dunn
237	Hackney, Hugh P	Durham
238	Hackney, Robt. P	Durham
239	Haywood, Chas. L	Durham
240	Harrison, A. S., M. D	Enfield
241	Horne, H. R	Fayetteville
242	Horne, Warren W	Fayetteville
243	Horne, Samuel R	Fayetteville
244	Hooks, Arthur	Richmond, Va.
245	Haithcock, S. S	Greensboro
246	Hill, John H., Jr	Goldsboro
247	Holt, Edwin M	Quarantine, La.
248	Hooker, Thomas M	Greenville
249	Hayes, Wm. A	Hillsboro
250	Hood, J. E	Kinston
251	Hunter, Norman C., M. D	Rockingham
252	Hall, Thomas N	Mooresville
253	Henry, Thomas A	New Bern
254	Harget, D. A	New Bern

No. Cert.	Name.	Address.
255	Hart, Louis W	Norwood
256	Hall, John G	Oxford
257	Hancock, F. W	Oxford
258	Hamilton, R. L	Oxford
259	Hester, J. R., M. D	Prospect Hill
260	Hicks, Henry T	Raleigh
261	Hunter, B. W	Raleigh
262	Hunter, Thomas B	Rockingham
263	Hambrick, W. R	Roxboro
264	Higgins, Charles M	Salisbury
265	Hood, Thomas R	Smithfield
266	Hood, William D	Kinston
267	Hall, William F	Statesville
268	Hargrave, W. W	Knoxville, Tenn.
269	Harper, Clarence P	Selma
270	Hardin, John H	Wilmington
271	Hall, James M	Wilmington
272	Hargrave, B. W	Atlanta
273	Herring, Doane	Wilson
274	Hollowell, Jabez K	Tarboro
275	Hunter, F. P	Portsmouth, Va.
276	Harrison, Wm. B	Greensboro
277	Herndon, Manly D	Durham
278	Hudson, John E	Kinston
279	Hall, John D	Wilmington
280	Howell, John T	Fayetteville
281	Hanks, John B	Raleigh
282	Hunter, M. C., M. D	Stanly
283	Harrison, Edroe V	Greensboro
284	Hunter, Forest V	Hendersonville
285	Holland, Willis T	Mount Holly
286	Hunter, Thomas W	Charlotte
287	Herring, William Henry	Clinton
288	Hall, James Samuel	Fayetteville
289	Hayley, Walter Eugene (col.)	Warrenton

No. Cert.	Name.	Address.
290	Hardee, Aldridge Kirk	Benson
291	Hart, John Albert	High Point
292	Hand, Jasper Kennedy	North Charlotte
293	Hamlet, Reginald	Raleigh
294	Hill, Grover William	Wilmington
295	Hall, Walter Alvis	Fayetteville
296	Hunter, Livingston O.	Charlotte
297	Hoyle, Hughes Baynes, M. D.	Jonesboro
298	Harper, J. E.	Durham

J

299	Joyner, T. C.	Franklinton
300	Johnson, A. S.	Sanford
301	Justus, W. H.	Hendersonville
302	Johnson, James I.	Raleigh
303	Jacocks, F. G.	Elizabeth City
304	Johnson, W. M.	Salisbury
305	Johnson, R. M.	Scotland Neck
306	Johnson, Sarah F.	Asheville
307	Johnson, Alice E.	Asheville
308	Julian, C. A., M. D.	Thomasville
309	Jarman, J. F.	Wilmington
310	Jones, W. A. (colored)	Winston-Salem
311	James, F. C., M. D.	Bethel
312	Judd, J. M., M. D.	Fuquay Springs
313	Joyner, C. C., M. D.	Farmville
314	Jones, H. E. (colored)	Asheville
315	Jones, W. J., M. D.	Seven Springs
316	Johnson, Roscoe S.	Enfield
317	Jetton, William A.	Davidson
318	Jacobs, Fred L.	Asheville
319	Jordan, R. H.	Charlotte
320	Johnson, D. D.	Concord
321	Jones, E. J.	Concord
322	Jenkins, Joseph Van	Rocky Mount

K

No. Cert.	Name.	Address.
323	Kidd, W. W	Charlotte
324	King, C. E	Durham
325	King, H. L	Durham
326	Kendrick, T. W	Charlotte
327	Kerner, L. C	Henderson
328	Kent, A. A., M. D	Lenoir
329	Klutz, P. J., M. D	Maiden
330	King, O. G	Raleigh
331	Kirkman, C. M	Smithfield
332	Kyser, P. B	Rocky Mount
333	Kluttz, T. F	Salisbury
334	Kendall, H. E	Shelby
335	Kendall, B. H	Shelby
336	Kluttz, E. E., M. D	Troutman
337	Kingsbury, W. R	Wilmington
338	Kluttz, A. J	Greensboro
339	Kellam, R. A	Elizabeth City
340	Kellam, W. D., M. D	Belhaven
341	King, C. H	Durham
342	Kidd, Charles B	Charlotte
343	Koonce, John E	Chadbourn
344	King, Leon Major	Greensboro
345	Kibler, Ralph Emory	Morganton
346	Kennedy, Henry Pearson, Jr., (col.)	Wilson

L

347	Lindsay, T. W	Beaufort
348	Lee, A. M., M. D	Clinton
349	Lee, R. E., M. D	Clinton
350	Lyday, W. M., M. D	Calhoun
351	Leggett, W. A	Edenton
352	Leggett, P. O	Newport News, Va.
353	Leggett, K., M. D	Hobgood
354	Lewis, H. W., M. D	Jackson

No. Cert.	Name.	Address.
355	Lee, Allen	Durham
356	Leslie, W. A	Morganton
357	Lodge, W. A	Raleigh
358	Laubenheimer, J. H	Orange, N. J.
359	Lutterloh, I. H., M. D	Sanford
360	Landquist, T. E	Winston-Salem
361	LeGwin, J. B	Wilmington
362	Lucas, J. W	Wilson
363	Lawing, K. L	Lincolnton
364	LeBoo, P. S. (colored)	Wilmington
365	Latham, A. C., Jr	Belhaven
366	Lynch, N. W	Wilmington
367	Lee, L. V., M. D	Lattimore
368	Love, Bedford E	Ridgeville
369	Love, Thomas, L., Jr. (colored)	Raleigh
370	Lee, Permillas A	Dunn
371	Leavister, Thomas O	Haw River
372	Love, J. H. (colored)	Raleigh
373	Lane, Walter Allen	New Bern
374	Lutz, Horace Cleveland	Canton

M

375	McMinn, James M	Asheville
376	Moody, W. F	Charlotte
377	Mauney, C. J	Albemarle
378	Matthews, T. A., M. D	Castalia
379	McLauchlin, D. A	Charlotte
380	Murphy, W. E., M. D	Corbett
381	Marsh, M. L	Concord
382	Merritt, E. S	Chapel Hill
383	McLeod, Gilbert, M. D	Carthage
384	McNeeley, S. H., M. D	Canton
385	Matthews, A. B	Durham
386	Mabry, W. A	Durham
387	Matthews, G. E	Rocky Mount

No. Cert.	Name.	Address.
388	McKethan, J. A., M. D.	Fayetteville
389	Mansfield, A. L.	Baltimore, Md.
390	McIlhenny, J. K.	Greensboro
391	McNair, W. L. (colored	Greensboro
392	Montague, G. B.	Garner
393	Miller, Charles B.	Goldsboro
394	MacKay, D. McN.	Goldsboro
395	Mitchell, P. A.	Graham
396	Menzies, E. B.	Hickory
397	Martin, W. S.	Hickory
398	Matton, G. A.	High Point
399	Mann, J. D.	High Point
400	McIver, J. A.	Jonesboro
401	McDonald, H. M.	LaGrange
402	McDonald, A. M.	LaGrange
403	McMillan, J. D., M. D.	Lumberton
404	Martin, S. L., M. D.	Leaksville
405	Miller, E. H.	Mooresville
406	Morphew, M. F., M. D.	Marion
407	Moose, A. W.	Mount Pleasant
408	Moose, G. D.	Mount Pleasant
409	McKesson, L. W.	Morganton
410	Montague, G. W.	Durham
411	McClenahan, W. A.	Norfolk, Va.
412	MacNair, W. R.	Henderson
413	Morris, J. De	Roxboro
414	May, W. A.	Rocky Mount
415	Manly, J. B.	Salisbury
416	Mitchenor, J. A.	Edenton
417	McNair, W. H.	Tarboro
418	Missildine, E. E.	Tryon
419	Munds, J. C.	Wilmington
420	Munds, W. C.	Wilmington
421	Mask, T. R., M. D. (colored)	Wilmington
422	Moore, B. C.	Wilmington

No. Cert.	Name.	Address.
423	Mintz, M. B.	Wilmington
424	McKeel, C. B.	Washington
425	McIntosh, J. B. S.	Waynesville
426	McKay, H. H.	Selma
427	Mitchell, J. H., M. D.	Ahoskie
428	Mayer, C. R.	Charlotte
429	McKinnon, W. L.	Maxton
430	Moore, C. E., Jr.	Wilson
431	McCauley, M. E.	Monroe
432	McLarty, Eugene	Waxhaw
433	McNeill, G. McK.	Rowland
434	McMillan, John D., Jr.	Lumberton
435	Moore, William H	Wilmington
436	Miller, Carl T.	Wilmington
437	McNeill, George R.	Vineland
438	McKinnon, Murdock H.	Red Springs
439	Mullen, Edward G.	Charlotte
440	Monger, James M.	Sanford
441	McNair, Frank W. (colored)	Greensboro
442	McGhee, George F.	Charlotte
443	McMullen, Oscar, M. D.	Elizabeth City
444	McCraw, William Polk	Williamston
445	Morrison, Matthew Stuart	Concord
446	Marsh, Numa Frank	Ramseur
447	McKinney, William Merrimon	Belhaven
448	Martin, Earle Wall	Wadesboro
449	Mayo, Thomas H.	Greensboro
450	Moody, Robert Franklin	Charlotte
451	Marion, John Ernest	Winston-Salem
452	McLarty, Howard	Charlotte
453	Morrow, Earl	Gastonia

N

454	Nichols, Z. W.	Brevard
455	Nottingham, G. S.	Norfolk, Va.
456	Niestlie, William	Wilmington

No. Cert.	Name.	Address.
457	Nicholson, A. T	Tarboro
458	Nowell, Edwin	Greensboro
459	Norman, J. S	Lumberton
460	Nicholson, T. H	Murfreesboro

O

461	O'Hanlon, E. W	Winston-Salem
462	Oates, George, M. D	Grover
463	O'Brien, Lex C	Winston-Salem

P

464	Pelham, S. D	Asheville
465	Pfafflin, H. A	Asheville
466	Parker, G. E., M. D	Benson
467	Purcell, E. P	Charlotte
468	Purcell, S. M	Salisbury
469	Patterson, Alvis	Wilson
470	Perry, W. M	Elizabeth City
471	Perry, H. H. (colored)	Fayetteville
472	Page, B. Frank	Greensboro
473	Powell, D. A	Goldsboro
474	Powell, J. W	Goldsboro
475	Palmer, R. W., M. D	Gulf
476	Pate, W. T., M. D	Gibson
477	Parker, W. W	Henderson
478	Parrott, W. T., M. D	Kinston
479	Perry, E. B	Littleton
480	Pleasants, F. R	Louisburg
481	Pilkington, G. R	Pittsboro
482	Pearsall, A. L	Lillington
483	Pescud, J. S	Raleigh
484	Parker, F. W	Raleigh
485	Plummer, James	Salisbury
486	Pendleton, M. M	Warrenton
487	Perry, H. W	Yanceyville

No. Cert.	Name.	Address.
488	Pemberton, T. R.	Greensboro
489	Pope, J. A.	Lumberton
490	Pinnix, J. M.	Kernersville
491	Pike, J. W.	Greensboro
492	Patterson, Wallace D.	Edenton
493	Powell, James B.	Oxford
494	Phifer, Walter L.	Morganton
495	Peele, James F.	LaGrange
496	Payne, Max T.	Greensboro
497	Parker, Roland H.	Durham
498	Pittman, Henry Hampton.	Winston-Salem
499	Parsons, Frederick Calvin.	Wadesboro
500	Person, Thomas Edgar.	Clayton
501	Parker, Richard Smith.	Southern Pines
502	Picot, L. J., M. D.	Littleton
503	Palmer, Robert Rodwell.	Warrenton
504	Patterson, Jas. H., Jr. (col.)	Winston-Salem
505	Prior, Jackson L.	Atlanta, Ga.

R

506	Raysor, C. A.	Asheville
507	Reese, A. B.	Charlotte
508	Rowland, G. J.	Henderson
509	Rhinehart, M. T.	Asheville
510	Richardson, L.	Greensboro
511	Roberts, A. R.	Gatesville
512	Robinson, M. E., M. D.	Goldsboro
513	Ring, W. A.	High Point
514	Rutherford, L. A., M. D. (col.)	Kinston
515	Reedy, John	Old Fort
516	Robinson, Frank, M. D.	Lowell
517	Robertson, F. H.	Roanoke Rapids
518	Reaves, L. E.	Waxhaw
519	Reeves, Jefferson	Waynesville
520	Riddick, I. G., M. D.	Youngsville

No. Cert.	Name.	Address.
521	Rogers, J. A	Lillington
522	Reagan, J. R	Bryson City
523	Ring, L. B	Greensboro
524	Robertson, J. B., M. D	Clayton
525	Royster, S. S., M. D	Mooresboro
526	Reeves, Thomas H	Weaverville
527	Rea, Verne	Durham
528	Roth, Richard H	Asheville
529	Reid, William W	Sanford
530	Ring, J. W., M. D	Elkin
531	Ring, Clifton A	High Point
532	Redding, Ernest F	Gibsonville
533	Robinson, Paul Patton	Asheville
534	Reeves, Melvin Hezekiah	Waynesville
535	Rose, Ira Winfield	Rocky Mount
536	Richmond, Caleb Hazzard	Atlanta, Ga.
537	Robinson, Gordon Costner	Winston-Salem
538	Robinson, John Linwood	Rutherfordton
539	Ransom, John Lester	Charlotte

S

540	Smith, T. C., M. D	Asheville
541	Smith, W. G	Asheville
542	Smith, F. S	Asheville
543	Sisk, C. T	Andrews
544	Snuggs, W. H	Albemarle
545	Stafford, W. G., M. D	Burlington
546	Stroud, T. H	Burlington
547	Scott, John M	Charlotte
548	Sheppard, J. W	Charlotte
549	Stowe, J. P	Charlotte
550	Sanders, T. F	Clinton
551	Swaringen, DeWitt C	China Grove
552	Sexton, C. H., M. D	Dunn
553	Skinner, R. E. L	West Durham

No. Cert.	Name.	Address.
554	Summey, Ptolemy	Dallas
555	Sledge, R. S.	Lumberton
556	Sedberry, C. D.	Fayetteville
557	Sedberry, H. S.	Fayetteville
558	Sykes, A. J.	Greensboro
559	Sykes, Eugene	Greensboro
560	Smith, F. T.	Franklin
561	Smith, Charles H.	Charlotte
562	Simmons, J. C.	Graham
563	Shuford, C. M.	Hickory
564	Sprague, J. F.	New York
565	Smith, J. B., M. D.	Lexington
566	Shell, J. E.	Lenoir
567	Swindell, D. C.	Rocky Mount
568	Stevens, J. H.	Knoxville, Tenn.
569	Simpson, C. N., Jr.	Monroe
570	Streetman, J. W.	Marion
571	Smith, John R.	Mount Olive
572	Strickland, J. T., M. D.	Nashville
573	Stedman, J. P.	Oxford
574	Stroud, O. B., M. D.	Ore Hill
575	Shore, M. L.	Raleigh
576	Simpson, Robert	Raleigh
577	Simpson, T. S.	Winston-Salem
578	Sapp, L. L., M. D.	Reidsville
579	Sloop, L. L.	Thomasville
580	Shaffner, H. F.	Winston-Salem
581	Stimson, Logan	Statesville
582	Sadelson, G. H., M. D.	Charlotte
583	Staton, L. L., M. D.	Tarboro
584	Shepard, J. C., Jr.	Wilmington
585	Sasser, L. B.	Wilmington
586	Smith, J. A., M. D.	Wilmington
587	Stone, A. H.	Spray
588	Saintsing, J. E.	Wake Forest

No. Cert.	Name.	Address.
589	Smith, F. L.	Concord
590	Streetman, T. L.	Asheville
591	Stewart, W. M.	Charlotte
592	Sedberry, H. B., Jr.	Fayetteville
593	Spencer, W. B.	Norfolk, Va.
594	Seawell, C. C.	Asheville
595	Sauls, M. M.	Ayden
596	Sanderford, John F., M. D.	Creedmoor
597	Smith, Leonidas C., M. D.	Polkton
598	Snipes, Edward P., M. D.	Jonesboro
599	Stanley, John H., M. D.	Four Oaks
600	Stancill, George W.	Hope Mills
601	Strickland, William J., M. D.	Moncure
602	Seagle, F. M.	Hickory
603	Schutt, T. C. H.	Wilmington
604	Shelton, Claude F.	High Point
605	Scoggin, Lewis A.	Greenville
606	Smith, Thomas L.	Warsaw
607	Steere, L. E.	Charlotte
608	Stanback, Thomas M.	Mount Gilead
609	Suggs, Robert B.	Belmont
610	Suttle, Julius Albert	Shelby
611	Shade, Isaac Albert (colored)	Raleigh
612	Shepperd, Hayden Albert	Monroe
613	Secrest, Andrew McDowd	Vineland

T

614	Thormann, A. W.	Golden, Col.
615	Thomas, E. R.	Duke
616	Thompson, A. J.	Graham
617	Thomas, J. T.	Henderson
618	Tucker, W. M.	Raleigh
619	Temple, R. H., M. D.	Kinston
620	Thomas, W. G.	Raleigh
621	Teal, Cornelius, M. D.	Linville

No. Cert.	Name.	Address.
622	Tull, John	Waynesville
623	Taylor, J. L.	Asheville
624	Tarkinton, E. L.	Plymouth
625	Tucker, R. H.	Reidsville
626	Townsend, E. F.	Red Springs
627	Turner, W. D.	Concord
628	Tunstall, N. R.	Statesville
629	Thomas, C. R.	Thomasville
630	Thomas, J. E. (colored)	Wilmington
631	Thompson, P. A.	Winston-Salem
632	Thomas, C. A., M. D.	Warrenton
633	Thompkins, W. C., M. D.	Webster
634	Thompson, A. F., M. D.	Troy
635	Trotter, P. L.	Mount Airy
636	Turlington, R. A.	Wilson
637	Tally, Hugh A.	Jonesboro
638	Teague, M. F.	Asheville
639	Thompson, James D.	Wadesboro
640	Thomas, John N.	Warrenton
641	Thomas, Percy Durand	New Bern
642	Trotter, James Robert	Reidsville
643	Thrower, Hiram Eldridge	Weldon
644	Tugwell, James Benjamin	Raleigh
645	Tart, D. Whitfield	Hillsboro

U

646	Underhill, H. P., M. D.	Wendell
647	Utley, B. S., M. D.	Holly Springs

V

648	Vaughan, P. W.	Durham

W

649	Walker, T. A.	Asheville
650	Webb, Paul	Shelby
651	Wheeler, L. B.	Asheville

No. Cert.	Name.	Address.
652	Whitaker, A. S., M. D.	Biltmore
653	Welsh, S. J., M. D.	Monroe
654	Williams, Edgar E.	East Durham
655	Wearn, W. H.	Charlotte
656	Wilson, W. M.	Charlotte
657	Williams, J. T., M. D. (col.)	Charlotte
658	Woodall, J. P.	Charlotte
659	Williams, M. P.	Charlotte
660	Waldo, E. O.	Cary
661	Williams, S. W.	Concord
662	White, J. A.	Davidson
663	Ward, H. B.	Rowland
664	Whtaker, W. B.	Elberton, Ga.
665	Whittington, J. M.	East Bend
666	Watson, J. B.	Raleigh
667	Williston, J. T. (colored)	Fayetteville
668	Ward, G. W.	Greensboro
669	Williams, W. V.	Goldsboro
670	Wooten, J. L.	Greenville
671	Walker, C. A.	Asheville
672	Waldrop, J. G., M. D.	Hendersonville
673	Wootten, G. R.	Hickory
674	Welborne, W. F.	Lexington
675	Walker, Lewis	Milton
676	Williston, F. O. (colored)	Wilson
677	Williams, R. I.	Raleigh
678	Worthen, B. S.	Spencer
679	Webb, C. I.	Shelby
680	Whitehead, E. T.	Scotland Neck
681	Watson, D. I., M. D.	Southport
682	Watson, G. Y.	Southport
683	Wheeless, J. M.	Spring Hope
684	Wright, S. P., M. D.	Wilmington
685	Watson, H. P.	Winston-Salem
686	White, H. G.	Elm City

No. Cert.	Name.	Address.
687	Washam, W. W., M. D.	Cornelius
688	Wilkins, W. R.	Salisbury
689	Wooten, F. M.	Greenville
690	White, T. C. (colored)	Winston-Salem
691	Wright, J. B., M. D.	Lincolnton
692	Williams, James L.	Gastonia
693	Whitaker, Luther T., M. D.	Enfield
694	Woodruff, Theodore C.	Charlotte
695	Webb, James S.	Wadesboro
696	Wood, Ernest H.	New Bern
697	Wolfe, John C.	Waxhaw
698	Watkins, W. O.	Rutherfordton
699	Worthy, Ford S.	Washington
700	Wolfe, Drayton	Lincolnton
701	Welfare, Samuel E.	Winston-Salem
702	White, Frederick L.	Mebane
703	Whitfield, William C., M. D.	Grifton
704	Wood, Julian E., M. D.	Elizabeth City
705	Whittington, James Benbow	East Bend
706	Webb, Eugene Lea	Whiteville

Y

707	Yearby, W. M.	Durham
708	York, N. D., M. D.	Mebane
709	Young, James, M. D.	Mooresville
710	Young, John	Salisbury
711	Yarbrough, A. C.	Spring Hope
712	Young, Guilford E., M. D.	Forest City
713	Young, Cadmus T.	New Bern
714	Yancey, Darcey Cecil (col.)	Fayetteville

Z

715	Zoeller, E. V.	Tarboro
716	Zollicoffer, A. R., M. D.	Weldon

LIST OF REGISTERED PRACTICING PHYSICIANS

Living in Towns of Not More Than 500 Inhabitants to Whom Permits Have Been Granted to Conduct Drug Stores.

No. Permit.	Name.	Town.	County.
1	Dr. Zebulon Marvin Caviness	Wakefield	Wake
2	Dr. Daniel Marion Moser	Claremont	Catawba
4	Dr. Robert Henry Hargrove	Robersonville	Martin
5	Dr. Mahlon Bolton	Rich Square	Northampton
6	Dr. Frank Roberts	Marshall	Madison
7	Dr. Benjamin Lafayette Long	Hamilton	Martin
8	Dr. Robert John Nelson	Robersonville	Martin
9	Dr. Ashburry Sullivan Nichols	Sylva	Jackson
10	Dr. Delos Dexter Hooper	Sylva	Jackson
11	Dr. Thomas Franklin Stevenson	Huntersville	Mecklenburg
12	Dr. Isaac Erastus Burnett	Mars Hill	Madison
13	Dr. Guy Franklin Thigpen	Bethel	Pitt
14	Dr. Rezin Delmere Patterson	Liberty	Randolph
16	Dr. James Philip Battle	Nashville	Nash
17	Dr. William Davis Lovett	Montezuma	Mitchell
19	Dr. Lloyd Pecemas Russell	Arden	Buncombe
20	Dr. George Andrew Hood	Kenly	Johnson
21	Dr. Carl Whit Sutton	Richlands	Onslow
22	Dr. Solomon Spainhour Flynt	Rural Hall	Forsyth
23	Dr. Mott Parks Blair	Marshville	Union
24	Dr. James Henry Harper	Snow Hill	Greene
25	Dr. Arthur Wesley Greene	Ahoskie	Hertford
26	Dr. Thomas Greenbery Cooksey	Saluda	Polk
27	Dr James Henry Teague	Whittier	Swain
28	Dr. Charles Pender Edwards	Burnsville	Yancey
29	Dr. Ginnada Thomas Sikes	Creedmoor	Granville
30	Dr. John William McLean	Godwin	Cumberland
31	Dr. John Lemuel Carroll	Skyland	Buncombe
32	Dr. Joseph Walker Floyd	Tabor	Columbus
33	Dr. Joseph L. Spruill	Columbia	Tyrrell

NECROLOGY RECORD.

(From Registered List.)

W. H. KING,
Raleigh.

CLAUD L. THOMPSON,
Thomasville.

L. R. WRISTON,
Charlotte.

J. A. SYKES,
Greensboro.

L. D. ALLISON,
Morganton.

F. L. TAYLOR,
Oxford.

DR. W. W. GRIGGS,
Elizabeth City.

DR. J. P. SUGGS,
Kittrell.

J. B. ISENHOUR,
Salisbury.

AN ACT TO REVISE, CONSOLIDATE AND AMEND THE PHARMACY LAW.

The General Assembly of North Carolina do enact:

SECTION 1. That the North Carolina Pharmaceutical Association, and the persons composing the same, shall continue to be a body politic and corporate, under the name and style of the North Carolina Pharmaceutical Association, and by said name shall have the right to sue and be sued, to plead and be impleaded, to purchase and hold real estate and grant the same, to have and to use a common seal, and to do such other things and perform such other acts as appertain to bodies corporate and politic, not inconsistent with the Constitution and laws of the State.

Body politic

Name

Corporate powers

SEC. 2. That the object of said Association is to unite the pharmacists and druggists of this State for mutual aid, encouragement and improvement, to encourage scientific research, develop pharmaceutical talent, to elevate the standard of professional thought and ultimately restrict the practice of pharmacy to properly qualified druggists and apothecaries.

Objects of association

SEC. 3. That every person who shall engage in the sale of drugs, chemicals and medicines shall be held responsible for the quality of all drugs, chemicals and medicines he may sell or dispense, with the exception of those sold in the original packages of the manufacturers, and also those known as "patent or proprietary medicines;" and should he intentionally adulterate, or cause to be adulterated, or exposed to sale, knowing the same to be adulterated, any drugs, chemicals or medical preparations, he shall be guilty of a misdemeanor and liable to a fine not exceeding one hundred dollars, and in addition thereto his name shall be stricken from the register of licensed pharmacists, provided he be a licensed pharmacist.

Responsibility of druggists for purity of drugs, etc.

Intentional adulteration a misdemeanor

Penalty

SEC. 4. That it shall be unlawful for any person not licensed as a pharmacist within the meaning of this act to conduct or manage any pharmacy, drug or chemical store, apothecary shop or other place of business

Unlawful for unlicensed pharmacist to conduct or manage drug store, compound prescriptions, etc.

for the retailing, compounding or dispensing of any drugs, chemicals or poison, or for the compounding of physicians' prescriptions, or to keep exposed for sale at retail any drugs, chemicals or poison, except as hereinafter provided, or for any person not licensed as a pharmacist within the meaning of this act to compound, dispense or sell at retail any drug, chemical, poison or pharmaceutical preparation upon the prescription of a physician or otherwise, or to compound physicians' prescriptions except as an aid to and under the immediate supervision of a person licensed as a pharmacist under this act. And it shall be unlawful for any owner or manager of a pharmacy or drug store or other place of business to cause or permit any other than a person licensed as a pharmacist to compound, dispense or sell at retail any drug, medicine or poison except as an aid to and under the immediate supervision of a person licensed as a pharmacist: *Provided, however,* That nothing in this section shall be construed to interfere with any legally registered practitioner of medicine in the compounding of his own prescriptions, nor with the exclusively wholesale business of any dealer who shall be licensed as a pharmacist or who shall keep in his employ at least one person who is licensed as a pharmacist, nor with the selling at retail of non-poisonous domestic remedies, nor with the sale of patent or proprietary preparations which do not contain poisonous ingredients, nor with the sale of poisonous substances which are sold exclusively for use in the arts or for use as insecticides when such substances are sold in unbroken packages bearing a label having plainly printed upon it the name of the contents, the word, "Poison," the vignette of the skull and cross bones and the name of at least two readily obtainable antidotes: *Provided, further,* That in any village of not more than five hundred inhabitants the Board of Pharmacy may grant any legally registered practicing physican a permit to conduct a drug store or pharmacy in such village, which permit shall not be valid in any other village than the one for which it was granted, and shall cease and terminate when the population of the village for which such permit was granted shall become greater than five hundred: *And provided further,* That the Board of Pharmacy may, after due investigation, grant to any legally registered practicing physician in towns or villages of not more than five hundred, and not

Unlawful for owner or manager to permit the same

Proviso as to licensed physician

Wholesale dealers

Other exceptions

Proviso as to towns under five hundred inhabitants

exceeding six hundred inhabitants, a permit to conduct a drug store or pharmacy in such town or village subject to the provisions of this act. Towns not exceeding six hundred inhabitants

SEC. 5. That the Board of Pharmacy shall consist of five persons licensed as pharmacists within this State, who shall be elected and commissioned by the Governor as hereinafter provided. Board of pharmacy

SEC. 6. That the members of the present Board of Pharmacy shall continue in office until the expiration of their respective terms, and the rules, regulations and by-laws of said board, so far as they are not inconsistent with the provisions of this act, shall continue in effect. Present board, continuance in office, etc.

SEC. 7. That the North Carolina Pharmaceutical Association shall annually elect a resident pharmacist from its number to fill the vacancy annually occurring in said board, and the pharmacist so elected shall be commissioned by the Governor and shall hold the office for the term of five years and until his successor has been duly elected and qualified. In case of death, resignation or removal from the State of any member of said Board of Pharmacy, the said board shall elect in his place a pharmacist who is a member of said North Carolina Pharmaceutical Association, who shall be commissioned by the Governor as a member of the said Board of Pharmacy for the remainder of the term. It shall be the duty of a member of the Board of Pharmacy, within ten days after receipt of notification of his appointment and commission, to appear before the Clerk of the Superior Court of the county in which he resides and take and subscribe an oath to properly and faithfully discharge the duties of his office according to law. Vacancy, how filled

Oath of office

SEC. 8. The Board of Pharmacy shall organize by the election of a president and a secretary and treasurer, both of whom shall be members of the said board, and they shall hold their offices until their successors shall have been elected and qualified. The secretary and treasurer shall give bond in such sum as may be prescribed by the board, conditioned for the faithful discharge of the duties of his office according to law, and said bond shall be made payable to the North Carolina Board of Pharmacy and approved by the president of said board. The said board shall hold an annual meeting at such time and place as it may provide by rule for the examination of candidates and for the discharge of President and secretary and treasurer

Bond of secretary and treasurer

Annual meetings

such other business as may legally come before it, and

Additional meetings

said board may hold such additional meetings as may be necessary for the examination of candidates and for the discharge of any other business.

Common seal

SEC. 9. That the Board of Pharmacy shall have a common seal, and shall have the power and authority to *define and designate non-poisonous domestic remedies,

Powers of board

adopt such rules, regulations and by-laws, not inconsistent with this act, as may be necessary for the regulation of its proceedings, and for the discharge of the duties imposed under this act, and shall have power and authority to employ an attorney to conduct prosecutions and to assist in the conduct of prosecutions under this act, and for any other purposes which said board may

Record of proceedings

deem necessary. The said Board of Pharmacy shall keep a record of its proceedings and a register of all persons to whom certificates of license as pharmacists and permits

Record of licentiates

have been issued, and of all renewals thereof; and the books and register of the said board, or a copy of any part thereof, certified by the secretary, attested by the

Register and books, evidence

seal of said board, shall be taken and accepted as competent evidence in all the courts of the State. The said Board of Pharmacy shall make annually to the

Annual report

Governor and to the North Carolina Pharmaceutical Association written reports of its proceedings and of its receipts and disbursements under this act and of all persons licensed to practice as pharmacists in this State. A majority of the board shall constitute a quorum for the transaction of all business.

Salary of secretary

SEC. 10. That the secretary of the Board of Pharmacy shall receive such salary as may be prescribed by the board and shall be paid his necessary expenses while engaged in the performance of his official duties. The other members of the said board shall receive the sum

Compensation of members

of five dollars for each day actually employed in the discharge of their official duty and their necessary expenses while engaged therein: *Provided*, That the compensation and expenses of the secretary and members of the

How paid

said Board of Pharmacy and all disbursements for expenses incurred by the said board in carrying into effect and executing the provisions of this act shall be paid from and out of the fees received by the said board.

Prosecutions for violation of this act

SEC. 11. Upon information that any provision of this act has been or is being violated, the secretary of the

*NOTE—The words printed in different type in Section 9 were passed as an amendment to the Pharmacy Law by the Legislature of 1907.

Board of Pharmacy shall promptly make investigations of such matters, and, upon probable cause appearing, shall file complaint and prosecute the offender. All fines and penalties prescribed in this act shall be recoverable by suit in the name of the people of the State.

Fines and penalties, how recoverable

Sec. 12. That the Board of Pharmacy shall be entitled to charge and collect the following fees: For the examination of an applicant for license as a pharmacist, five dollars; for renewing the license as a pharmacist, two dollars; for issuing a permit to a physician to conduct a drug store in a village of not more than five hundred inhabitants, three dollars; for the renewal of permit to a physician to conduct a drug store in a village of not more than five hundred inhabitants, two dollars. All fees shall be paid before any applicant may be admitted to examination or his name placed upon the register of pharmacists, or before any license or permit or any renewal thereof may be issued by the said board.

Fees

Fees to be paid in advance

Sec. 13. That every person now licensed or registered as a pharmacist under the laws of this State shall be entitled to continue in the practice of his profession until the expiration of the term for which his certificate of registration or license was issued. Every person who shall hereafter desire to be licensed as a pharmacist shall file with the secretary of the Board of Pharmacy an application, duly verified under oath, setting forth the name and age of the applicant, the place or places at which and the time he has spent in the study of the science and art of pharmacy, the experience in the compounding of physicians' prescriptions which the applicant has had under the direction of a legally licensed pharmacist, and such applicant shall appear at a time and place designated by the Board of Pharmacy and submit to an examination as to his qualifications for registration as a licensed pharmacist. The application hereinafter referred to shall be prepared and furnished by the Board of Pharmacy.

Duration of license

Application for license

Examination

Sec. 14. That in order to become licensed as a pharmacist, within the meaning of this act, an applicant shall not be less than eighteen years of age, he shall present to the board satisfactory evidence that he has had three years' experience in pharmacy under the instruction of a licensed pharmacist, and he shall also pass a satisfactory examination before the Board of

Qualifications of applicants

Proviso as to attendance on school or college of pharmacy

Minimum experience required

Pharmacy: *Provided, however,* That in the case of persons who have attended a reputable school or college of pharmacy the actual time of attendance at such school or college of pharmacy may be deducted from the time of experience required, but in no case shall less than two years' experience be required for a registration as a licensed pharmacist.

When license to be issued

SEC. 15. That if an applicant for license as a pharmacist has complied with all the requirements of the two preceding sections, the Board of Pharmacy shall enroll his name upon the register of pharmacists and issue to him a license which shall entitle him to practice as a pharmacist up to the first day of September next ensuing, as provided in this act for the annual renewal of every registration.

License without examination

Proviso as to qualification

SEC. 16. That the Board of Pharmacy may issue license to practice as pharmacists in this State, without examination, to such persons as have been legally registered or licensed as pharmacists by other Boards of Pharmacy: *Provided,* That the applicant for such license shall present satisfactory evidence of the same qualifications as are required from licentiates in this State, and that he was registered or licensed by examination by such other Board of Pharmacy, and that the standard of competence required by such Board of Pharmacy is not lower than that required in this State:

Proviso as to fees

Provided, further, That applicants for license under this section shall, with their application, forward to the secretary of the Board of Pharmacy the same fees as are required of other candidates for license.

Power to refuse license

SEC. 17. The Board of Pharmacy may refuse to grant a license to any person guilty of felony or gross immorality, or who is addicted to the use of alcoholic liquors or narcotic drugs to such an extent as to render him unfit to practice pharmacy; and the Board of Pharmacy may, after due notice and hearing, revoke a license for like cause or any license which has been procured by fraud.

Revocation of license

License to be conspicuously exposed

SEC. 18. That every certificate or license to practice as a pharmacist, and every permit to a practicing physician to conduct a pharmacy or drug store in a village of not more than five hundred inhabitants, and every last renewal of such license or permit shall be conspicuously exposed in the pharmacy or drug store or place of business of which the pharmacist, or other person

to whom it is issued, is the owner or manager, or in which he is employed. Every licensed pharmacist who desires to continue in the practice of his profession, and every physician holding a permit to sell drugs in a village of not more than five hundred inhabitants shall, within thirty days next preceding the expiration of his license or permit, file with the secretary and treasurer of the Board of Pharmacy an application for the renewal thereof, which application shall be accompanied by the fee hereinbefore prescribed.

Application for renewal of license

Sec. 19. That if the Board of Pharmacy shall find that an applicant has been legally licensed in this State, and is entitled to a renewal thereof, or to a renewal of a permit, it shall issue to him a certificate attesting that fact. And if any pharmacist shall fail, for a period of sixty days after the expiration of his license to make application to the Board for its renewal, his name shall be erased from the register of licensed pharmacists, and such person, in order to again become registered as a licensed pharmacist, shall be required to pay the same fee as in the case of original registration. And if any holder of a permit to sell drugs in a village of not more than five hundred inhabitants shall fail, for a period of sixty days after the expiration of his permit, to make application for the renewal thereof, his name shall be erased from the register of persons holding such permits, and he may be restored thereto only upon the payment of the fee required for the granting of original permit. The registration of every license and every permit issued by the board shall expire on the thirty-first day of August next ensuing the granting thereof.

When renewal to issue

Failure to apply for renewal, name erased

After erasure, fee required for renewal

Failure to apply in towns of less than five hundred inhabitants, erasure and restoration

Expiration of license

Sec. 20. That it shall be unlawful for any persons to sell or deliver to any person any of the following described substances or any poisonous compound, combination or preparation thereof, to-wit: The compounds and salts of arsenic, antimony, lead, mercury, silver and zinc, oxalic and hydrocyanic acids and their salts, the concentrated mineral acids, carbolic acid, the essential oils of almonds, pennyroyal, tansy and savine, croton-oil, creosote, chloroform, chloral hydrate, cantharides, or any aconite, belladonna, bitter almonds, colchicum, cotton root, conium, cannabis indica, digitalis, hyoscyamus, nux vomica, opium, ergot, stramonium, or any of the poisonous alkaloids or alkaloidal salts or other poisonous principles derived from the foregoing, or cocaine or any other poisonous alkaloids or their salts.

Unlawful to sell certain poisonous substances, except as prescribed in this section

When lawful

or any other virulent poisons, except in the manner following: It shall first be learned by due inquiry that the person to whom delivery is made is aware of the poisonous character of the substance, and that it is desired for a lawful purpose, and the box, bottle or other package shall be plainly labeled with the name of the substance, the word "Poison," and the name of the

Record of sale of poison

person or firm dispensing the substance. And before a delivery is made of any of the following substances, to-wit, the compounds and salts of arsenic, antimony and mercury, hydrocyanic acid and its salts, strychnine and its salts, and the essential oil of bitter almonds, there shall be recorded in a book kept for the purpose the name of the article, the quantity delivered, the purpose for which it is required as represented by the purchaser, the date of delivery, the name and address of the purchaser, the name of the dispenser, which book shall

Preservation of record

be preserved for at least five years and shall at all times be open to the inspection of the proper officers of the law: *Provided, however,* That the foregoing pro-

Proviso as to practitioners

vision shall not apply to articles dispensed upon the order of persons believed by the dispenser to be lawfully authorized practitioners of medicine or dentistry:

Manufacturers and wholesale dealers

And provided also, That the record of sale and delivery above mentioned shall not be required of manufacturers and wholesalers who shall sell any of the foregoing substances at wholesale; but the box, bottle or other package containing such substances, when sold at wholesale, shall be properly labeled with the name of the substance, the word "Poison," and the name and address of the

Proviso as to labeling paints

manufacturer or wholesaler: *Provided, further,* That it shall not be necessary to place a poison label upon or to record the delivery of the sulphide of antimony or the oxide or carbonate of zinc or lead, or of colors ground in oil and intended for use as paint, or Paris

Proviso as to poisons in medicinal percentages

green, when dispensed in the original package of the manufacturer or wholesaler, or calomel, paregoric or other preparations of opium containing less than two grains of opium to the fluid ounce, nor in the case of preparations containing any of the substances named in this section when in a single box, bottle or other package, or when the bulk of two fluid ounces or the weight of two avoirdupois ounces does not contain more than an adult medicinal dose of such poisonous substance.

Prescription files required

SEC. 21. That every proprietor or manager of a drug store or pharmacy shall keep in his place of business a suitable book or file, in which shall be preserved for

a period of not less than five years the original of every prescription compounded or dispensed at such drug store or pharmacy. Upon the request of the prescribing physician, or of the person for whom such prescription was compounded or dispensed, the proprietor or manager of such drug store or pharmacy shall furnish a true and correct copy of such prescription, and said book or file of original prescriptions shall at all times be open to the inspection and examination of duly authorized officers of the law or other persons authorized and directed by the Board of Pharmacy to make such inspection and examination.

Copy of prescriptions

Prescription files open to inspection

SEC. 22. That it shall be unlawful for any person not legally licensed as a pharmacist to take, use or exhibit the title of pharmacist or licensed or registered pharmacist, or the title druggist or apothecary, or any other title, name or description of like import.

Unlawful for non-licentiate to use or exhibit title

SEC. 23. That any person, not being licensed as a pharmacist, who shall conduct or manage any drug store, pharmacy or other place of business for the compounding, dispensing or sale at retail of any drugs, medicines or poisons, or for the compounding of physicians' prescriptions contrary to the provisions of section four of this act, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not less than twenty-five dollars nor more than one hundred dollars, and each week such drug store or pharmacy or other place of business is so unlawfully conducted shall be held to constitute a separate and distinct offense.

Conducting drug store, etc., contrary to provisions of this act a misdemeanor

Penalty

Each week constitutes separate offense

SEC. 24. That any person, not being licensed as a pharmacist, who shall compound, dispense or sell at retail any drug, medicine, poison or pharmaceutical preparation, either upon a physician's prescription or otherwise, and any person being the owner or manager of a drug store, pharmacy or other place of business, who shall cause or permit any one not licensed as a pharmacist to dispense, sell at retail or compound any drug, medicine, poison or physician's prescription contrary to the provisions of section four of this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than twenty-five dollars nor more than one hundred dolla[illegible]

Compounding contrary to this act a misdemeanor

Penalty

SEC. 25. That any license or permit, or [illegible]ewal thereof, obtained through fraud or by any fraudulent or false representations, shall be void and of no effect in law. Any person who shall make any fraudulent or

Fraudulent license, etc., void

Fraudulent representations a misdemeanor

Penalty

False affidavit or representation perjury

Penalty

false representations for the purpose of procuring a license or permit, or renewal thereof, either for himself or for another, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than twenty-five dollars nor more than one hundred dollars, and any person who shall wilfully make a false affidavit or any other false or fraudulent representation for the purpose of procuring a license or permit, or renewal thereof, either for himself or for another, shall be deemed guilty of perjury, and upon conviction thereof shall be subject to like punishment as is now prescribed for the crime of perjury.

Failure to expose license or permit a misdemeanor

Penalty

Each day separate offense

SEC. 26. That any person, being the holder of a license or permit granted under the provisions of this act, who shall fail to expose such license or permit, or renewal thereof, in a conspicuous position in the place of business to which such permit or license relates, or in which the holder thereof is employed, contrary to the provisions of section eighteen of this act, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than five dollars nor more than twenty-five dollars, and each day that such license, permit, or renewal thereof, shall not be exposed shall be held to constitute a separate and distinct offense.

Carrying on business after expiration a misdemeanor

Penalty

SEC. 27. That any person, being a holder of a license or permit granted under this act, who shall, after the expiration of such license or permit, and without renewing the same, continue to carry on the business for which such license or permit was granted, contrary to the provisions of section eighteen of this act, shall be guilty of a misdemeanor, and upon conviction thereof be fined not less than five dollars nor more than twenty-five dollars.

Selling poisons without label and record misdemeanor

Penalty

SEC. 28. That any person who shall sell or deliver to any person any poisonous substance specified in section twenty of this act, without labeling the same and recording the delivery thereof in the manner prescribed in said section twenty, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than twenty-five dollars nor more than one hundred dollars.

Misdemeanor for non-licentiate to take, use or exhibit title

SEC. 29. That any person, not being legally licensed as a pharmacist, who shall take, use or exhibit the title of pharmacist, licensed or registered pharmacist, druggist, apothecary or any other title, name or description of like import, contrary to the provisions of section

twenty-two of this act, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than twenty-five dollars nor more than one hundred dollars. Penalty

Sec. 30. That all laws and clauses of laws in conflict with the provisions of this act are hereby repealed. Conflicting laws repealed

Sec. 31. That this act shall be in force from and after its ratification.

In the General Assembly read three times, and ratified this 4th day of February, A. D. 1905.

THE NEW ANTI-NARCOTIC LAW.

An Act to Provide Against the Evils Resulting from the Traffic in Certain Narcotic Drugs, and to Regulate the Sale Thereof.

The General Assembly of North Carolina do enact:

Section 1. That it shall be unlawful for any person, firm or corporation to sell, furnish or give away any cocaine, alpha or beta eucaine, opium, morphine, heroin, or any salt or compound of any of the foregoing substances, or any preparation or compound containing any of the following substances, or their salts or compounds, except upon the original written order or prescription of a lawfully authorized practitioner of medicine, dentistry, or veterinary medicine, which order or prescription shall be dated and shall contain the name of the person for whom prescribed, or, if ordered by a practitioner of veterinary medicine, shall state the kind of animal for which ordered, and shall be signed by the person giving the prescription or order. Such written order or prescription shall be permanently retained on file by the person, firm or corporation who shall compound or dispense the article ordered or prescribed, and it shall not be again compounded or dispensed, except upon the written order of the original prescriber for each and every subsequent compounding or dispensing. No copy or duplicate of such written order or prescription shall be made or delivered to any person but the original shall at all times be open to the inspection by the prescriber and properly authorized officers of the law: *Provided, however,* That the above provisions shall not apply to preparations containing not more than two grains of opium or not more than one-fourth grain of

Sale of certain drugs forbidden except upon prescription.

What prescription to contain.

Prescriptions to be filed.

Not to be refilled.

No copy or duplicate to be furnished.

Original open to inspection.

Proviso: limitations.

morphine, or not more than one-fourth grain of heroin, or not more than one-eighth grain of cocaine, or not more than one-eighth grain of alpha or beta eucaine, in one fluid ounce, or, if a solid preparation, in one avoirdupois ounce: *Provided, also,* That the above provisions shall not apply to preparations containing opium and recommended and sold in good faith for diarrhœa and cholera, each bottle or package of which is accompanied by specific directions for use, and a caution against habitual use; nor to powder of ipecac and opium, commonly known as "Dover's Powder;" nor to liniments nor ointments when plainly labeled "For external use only:" *And provided further,* That the above provision shall not apply to sales at wholesale by jobbers, wholesalers and manufacturers, to retail druggists or qualified physicians, or to each other, nor to sales at retail by retail druggists to regular practitioners of medicine, dentistry or veterinary medicine, nor to sales at retail by retail druggists to habitués personally known as such to the sellers, nor to sales made to manufacturers of proprietary or pharmaceutical preparations for use in the manufacture of such preparations, nor to sales to hospitals, colleges, scientific or public institutions.

Proviso: further limitations.

Proviso: further limitations.

Prescriptions unlawful.

Sec. 2. It shall be unlawful for any practitioner of medicine, dentistry or veterinary medicine to furnish to or to prescribe for the use of any habitual user of the same any cocaine, heroin, alpha or beta eucaine, opium, morphine, or any salt or compound of any of the foregoing substances or any preparations containing any of the foregoing substances or their salts or compounds. And it shall also be unlawful for any practitioner of dentistry to prescribe any of the foregoing substances for any person not under his treatment in the regular practice of his profession, or for any practitioner of veterinary medicine to prescribe any of the foregoing substances for the use of any human being: *Provided, however,* That the provisions of this section shall not be construed to prevent any lawfully authorized practitioner of medicine from furnishing or prescribing in good faith for the use of any habitual user of narcotic drugs who is under his professional care such substances as he may deem necessary for their treatment when such prescriptions are not given or substances furnished for the purpose of evading the provisions of this act.

Proviso: limitation.

Misdemeanor.

Penalties: first offense.

Second offense.

Third offense.

Judges to charge grand juries.

Board of pharmacy to prosecute.

SEC. 3. Any person who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction for the first offense shall be fined not less than twenty-five dollars nor more than fifty dollars, and upon conviction for a second offense shall be fined not less than fifty dollars nor more than one hundred dollars, and upon conviction for a third offense shall be fined not less than one hundred dollars nor more than two hundred dollars, and may be imprisoned in the county jail for not more than six months; and if a licensed pharmacist, physician, dentist or veterinary surgeon, his license shall be revoked. It shall be the duty under this act of all Judges of the Superior Courts in this State, at every regular term thereof, to charge all regularly impaneled grand juries to diligently inquire into and investigate all cases of the violation of the provisions of this act and to make a true presentment of all persons guilty of such violations. It shall be the duty of the Board of Pharmacy to cause the prosecution of all persons violating the provisions of this act. No prosecution shall be brought for the sale of any patent or proprietary medicine containing any of the drugs or preparations hereinbefore mentioned until the Board of Pharmacy shall certify that such medicine contains any of the said drugs or preparations in excess of the maximum percentage hereinbefore mentioned.

Procedure.

SEC. 4. In any proceedings under the provision of this act the charge may be brought against any or all of the members of a partnership, or against the directors or executive officers of a corporation, or against the agent or employee of any person, partnership or corporation.

SEC. 5. All laws and parts of laws in conflict with this act are hereby repealed.

SEC. 6. This act shall be in force from and after its ratification.

In the General Assembly read three times, and ratified this the 31st day of January, A. D. 1907.

PURE FOOD AND DRUG BILL.

AN ACT TO PREVENT THE MANUFACTURE OR SALE OF ADULTERATED, MISBRANDED, POISONOUS OR DELETERIOUS FOODS, DRUGS, MEDICINES OR LIQUORS.

The General Assembly of North Carolina do enact:

Board of Agriculture to secure samples and make analyses.

SECTION 1. That for the purpose of protecting the people of the State from imposition by the adulteration and misbranding of articles of food, drugs, confectionery or liquors, the Board of Agriculture shall cause to be procured from time to time, and under rules and regulations to be prescribed by them in accordance with section eleven of this act, samples of food, drugs, confectionery or liquors offered for sale in the State, and shall cause the same to be analyzed or examined microscopically or otherwise by the chemists or other experts of the Department of Agriculture.

Analyses to be published.

The Board of Agriculture is hereby authorized to make such publication of the results of the examination, analyses, and so forth, as they may deem proper.

Manufacture, sale or possession for sale of misbranded or adulterated articles a misdemeanor.

SEC. 2. That no person, firm or corporation, by himself or agent, shall manufacture, sell, expose for sale, or have in his possession with intent to sell, any article of food, drug, confectionery or liquor which is adulterated or misbranded within the meaning of this act, and any person who shall violate any of the provisions of this act shall be guilty of a misdemeanor, and for

Violation of act a misdemeanor.

Punishment, first offense.

such offense shall be fined not exceeding two hundred dollars for the first offense and for each subsequent

Subsequent offenses.

offense not exceeding three hundred dollars, or be imprisoned not exceeding one year, or both, in the discretion of the court; and such fines, less legal costs

Fines to use of Department of Agriculture.

and charges, shall be paid into the treasury of the State for the benefit of the Department of Agriculture, to be used exclusively in executing the provisions of this act.

Chemists to examine specimens.

SEC. 3. That the chemists or other experts of the Department of Agriculture shall make, under rules and regulations prescribed by the Board of Agriculture, examinations of specimens of food, drugs, confectionery or liquors offered for sale in North Carolina, which may be collected from time to time under their direction in various parts of the State; and if it shall appear from any such examinations that any

Notice if adulteration or misbranding found.

such specimen is adulterated or misbranded within the meaning of this act, that notice thereof shall be given

to the manufacturer or party from whom such sample was obtained. Any party so notified shall be given an opportunity to be heard under such rules and regulations as may be prescribed by the Commissioner and the Board of Agriculture, and if it appears that any of the provisions of this act have been violated, the Commissioner of Agriculture shall certify the facts to the Solicitor in the district in which such sample was obtained, and furnish that officer with a copy of the results of the analysis or other examinations of such article, duly authenticated by the analyst or other officer making such examination under the oath of such officer. In all prosecutions arising under this act the certificate of the analyst or other officer making the analysis or examination, when duly sworn to by such officer, shall be *prima facie* evidence of the fact or facts therein certified.

Parties to be heard.

Certificate to solicitor.

Certificate of analyst prima facie evidence.

Sec. 4. That it shall be the duty of every Solicitor to whom the Commissioner of Agriculture shall report any violation of this act to cause proceedings to be commenced and prosecuted without delay for the fines and penalties in such cases prescribed.

Solicitor to prosecute actions.

Sec. 5. That the term "drug" as used in this act shall include all medicines and preparations recognized in the United States Pharmacopœia or National Formulary for internal or external use, and any substance or mixture of substances intended to be used for the cure, mitigation or prevention of disease of either man or other animals. The term "food" as used herein shall include all articles used for food, drink, confectionery, or condiment by man or other animals, whether simple, mixed or compound.

Definition of "drug."

Definition of "food."

Sec. 6. That for the purpose of this act an article shall be deemed to be adulterated:

Adulteration defined.

In case of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary official at the time of investigation: *Provided*, That no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof,

Drugs differing from official standard.

Proviso: variation from standard stated on package.

although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary.

Drugs below standard in strength or purity.

Second. If its strength or purity fall below the professed standard or quality under which it is sold.

In case of confectionery:

Confectioneries containing specified adulterants.

First. If it contains terra alba, barytes, talc, chrome yellow, or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spirituous liquor or compound or narcotic drug.

In the case of food:

Food mixed with substance reducing its value.

First. If any substance has been mixed or packed with it, so as to reduce or lower or injuriously affect its quality or strength.

Or has substituted substance.

Second. If any substance has been substituted wholly or in part for the article.

Or valuable constituent abstracted.

Third. If any valuable constituent of the article has been wholly or in part abstracted.

Or damage or inferiority concealed.

Fourth. If it be mixed, colored, powdered, coated or stained in a manner whereby damage or inferiority is concealed.

Or contains poisonous or deleterious ingredients.

Or contains specified adulterants.

Fifth. If it contains any added poisonous or other added deleterious ingredient which may render such article injurious to health. If it contains any of the following substances, which are hereby declared deleterious and dangerous to health when added to human food, to-wit: Colors which contain antimony, arsenic, barium, lead, cadmium, chromium, copper, mercury, uranium, or zinc; or the following colors: gamboge, corallin, picric acid, aniline, or any of the coal-tar dyes; saccharine, dulcin, glucin, or any other artificially or synthetically prepared substitute for sugar; paraffin, formaldehyde, beta-napthol, abrastol, benzoic acid or benzoates, salicylic acid or salicylates, boric acid or borates, sulphurous acid or sulphites, hydrofluoric acid or any fluorine compounds, sulphuric acid or potassium sulphate or wood alcohol: *Provided*, That catsups and condimental sauces may, when the fact is plainly and legibly stated in the English language on the wrapper and label of the package in which it is retailed, contain not to exceed two-tenths of one per cent of benzoic acid or its equivalent in sodium benzoate. Fermented liquors may contain not to exceed two-tenths of one per cent of combined sulphuric acid and not to exceed eight-thousandths of one per cent of sulphurous acid.

Proviso: catsups and condimental sauces.

Fermented liquors.

Sixth. If it consists in whole or in part of a filthy decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that had died otherwise than by slaughter. In addition to the ways already provided, sausage shall be deemed to be adulterated if it is composed in any part of liver, lungs, kidneys or other viscera of animals: *Provided*, That the use of animal intestines as sausage casings shall not be deemed to be an adulteration.

Animal or vegetable products unfit for food.

Specific adulterants of sausage.

Proviso: casings.

Seventh. If it differs in strength, quality or purity from the standards of purity of food products that have been or may be from time to time adopted by the Board of Agriculture.

Differing from standard.

Sec. 7. That the term "misbranded" as used herein shall apply to all drugs, or articles of food, or articles which enter into the composition of food, the package or label of which shall bear any statement, design or device regarding such article, or the ingredients or substance contained therein, which shall be false or misleading in any particular, and to any food or drug product which is falsely branded as to the State, Territory or country in which it is manufactured or produced.

"Misbranded" defined.

Package or label bearing false or misleading statements.

Falsely branded as to locality where produced.

That for the purpose of this act an article shall also be deemed to be misbranded:

Another definition.

In the case of drugs:

First. If it be in imitation of, or offered for sale under the name of, another article.

Imitations.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fails to bear a statement on the label of the quantity or proportion of any alcohol, morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such substances contained therein: *Provided*, That this shall not apply to prescriptions of regularly licensed physicians, dentists and veterinary surgeons, United States Pharmacopœia and National Formulary preparations.

Substitution.

Failure to bear statement of specific ingredients.

Proviso: prescriptions of physicians.

In the case of food:

In case of foods.

First. If it be an imitation of, or offered for sale under the distinctive name of, another article.

Imitations.

Second. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign

False or misleading labels or branded.

Substitution.

product when not so, or if the contents of the package as originally put up shall have been removed in whole or in part, and other contents shall have been placed

Failure to specify specific ingredients.

in such package, or if it fail to bear a statement on the label of the quantity or proportion of any morphine, opium, cocaine, heroin, alpha or beta eucaine, chloroform, cannabis indica, chloral hydrate, or acetanilide, or any derivative or preparation of any such sub-

Packages to bear date.

stances contained therein. That all cans, jars or other packages containing canned meats intended for food, shall have printed on the label thereof the correct date on which said food product was canned or put into said package, as provided in the National Pure Food Law.

Weight and measure to be stated.

Third. If in package form, and the contents are stated in terms of weight or measure, they are not plainly and correctly stated on the outside of the package.

False or misleading design or device.

Fourth. If the package containing it or its label shall bear any statement, design or device regarding the ingredients or the substances contained therein, which statement, design or device shall be false or

Proviso: foods not deemed misbranded or adulterated.

misleading in any particular: *Provided*, That an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

Mixtures or compounds under their own names.

First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food under their own distinctive names, and not an imitation of, or offered for sale under the distinctive name of, another article, if the name be accompanied on the same label or brand with a statement of the place and where said article has been manufactured or produced.

Labeled compounds, imitations or blends.

Second. In the case of articles labeled, branded or tagged so as to plainly indicate that they are compounds, imitations or blends, and the word "compound," "imitation," or "blend," as the case may be, is plainly stated on the package in which it is offered for sale: *Provided*, The labeling is according to the

Proviso: "blend" construed.

rules prescribed by the Board of Agriculture: *Provided*, That the term "blend" as used herein shall be construed to mean a mixture of like substances, not excluding harmless coloring or flavoring ingredients used for the purpose of coloring and flavoring only:

Proviso: trade formulas.

And provided further, That nothing in this act shall be

construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredient to disclose their trade formulas, except in so far as the provisions of this act may require to secure freedom from adulteration or misbranding.

Animals slaughtered under unsanitary conditions.

SEC. 8. That it shall be unlawful for any person or persons, firm or corporation, to sell, or to have in his or their possession to sell for human food, the carcass or parts of carcasses of any animal which has been slaughtered, prepared or kept under unsanitary conditions; and unsanitary conditions shall legally exist wherever and whenever any one or more of the following conditions appear or are found, to-wit: If the slaughter-house is dilapidated and in a state of decay; if the drainage of the slaughter-house or slaughter-house yard is not efficient; if maggots or filthy pools or hog-wallows exist in the slaughter-house yard or under the slaughter-house; if the water supply is not pure and unpolluted; if hogs are kept in the slaughter-house yard, or fed therein on animal offal, or if the odors of putrefaction plainly exist therein, or if kept in unclean, bad-smelling refrigerators, or if kept in unclean or bad-smelling storage-rooms.

Unsanitary conditions enumerated.

Health officers to seize carcasses.

All peace and health officers shall have the power and are commanded to seize any animal carcass or parts of carcasses which are intended for sale or offered for sale for human food, which have been slaughtered and prepared, handled or kept under unsanitary conditions as herein defined, and shall deliver the same forthwith to and before the nearest police judge or justice of the peace, together with all information obtained, and said police judge or said justice of the peace shall, upon sworn complaint being filed, issue warrants of arrest for all persons who have violated the provisions of this section, and proceed to try the case. Any person, persons, firm or corporation found guilty of violating the provisions of this section shall be fined not less than ten nor more than one hundred dollars, and the meat in question shall be destroyed.

Police judge or justice of the peace.

Warrants of arrest.

Punishment.

Dealer relieved from prosecution by certificate from seller.

SEC. 9. That no dealer shall be prosecuted under the provisions of this act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer or other party, residing in North Carolina, from whom he purchases such articles, to the effect that the same is not adulterated or misbranded within the meaning of

this act, designating it. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of such articles to such dealer, and in such cases said party or parties shall be amenable to the prosecutions, fines and other penalties which would attach, in due course, to the dealer under the provisions of this act: *Provided*, That the above guaranty shall not afford protection to any dealer after the first offense in connection with a product from a particular wholesaler, jobber or manufacturer.

Proviso: guaranty not to excuse second offense.

Standards to be fixed and published.

SEC. 10. The Board of Agriculture shall, from time to time, fix and publish standards or limits of variability permissible in any article of food, confectionery or liquors, and the North Carolina Board of Pharmacy shall, from time to time, fix and publish standards or limits of variability permissible in any article of drugs, and these standards, when so published, shall be the standards before all courts: *Provided*, that when standards have been or may be fixed by the Secretary of Agriculture of the United States, they shall be accepted by the Board of Agriculture, and published as the standards for North Carolina: *Provided*, That these standards shall not apply to United States Pharmacopœia and National Formulary preparations. The Board of Agriculture shall have authority to make uniform rules and regulations for carrying out the provisions of this act, and in the appointment of a drug inspector under the provisions of this act, they shall confer with the North Carolina Board of Pharmacy.

Proviso: national standards.

Proviso: standards of drugs.

Rules and regulations.

Drug inspector.

Purchase of samples.

SEC. 11. That every person who offers for sale or delivers to a purchaser any food, drugs, confectionery or liquors, shall furnish within business hours and upon tender and full payment of the selling price, a sample of such food, drugs, confectionery or liquors to any person duly authorized by the Board of Agriculture to secure the same, and who shall apply to such manufacturer or vender or person delivering to a purchaser, food, drugs, confectionery or liquors, for such sample for such use in sufficient quantity for the analysis of such article or articles in his possession.

Manufacturer or dealer refusing to sell sample or obstructing operation of act guilty of misdemeanor.

SEC. 12. That any manufacturer or dealer who refuses to comply, upon demand, with the requirements of section eleven of this act, or any manufacturer, dealer or person who shall impede, obstruct, hinder or otherwise prevent, or attempt to prevent,

any chemist, inspector or other person in the performance of his duty in connection with this act, shall be guilty of a misdemeanor, and upon conviction be fined not less than ten dollars nor more than one hundred dollars, or be imprisoned, in the discretion of the court; and said fines, less the legal costs, shall be paid into the treasury of the State for the benefit of the Department of Agriculture, to be used exclusively in executing the provisions of this act. Punishment. Fines to use of Department of Agriculture.

SEC. 13. The word "person" as used in this act shall be construed to import both the plural and the singular, as the case demands, and shall include corporations, companies, societies and associations. When construing and enforcing the provisions of this act, the act, omission or failure of any officer, agent or other person acting for or employed by any corporation, company, society or association within the scope of his employment or office, shall in every case be also deemed to be the act, omission or failure of such corporation, company, society or association, as well as that of the person. Definitions.

SEC. 14. That any person, firm or corporation who shall manufacture, sell or offer for sale any article of food, drug or liquor that is adulterated or misbranded within the meaning of this act, shall be guilty of a misdemeanor, and in addition to being subject to the penalties already provided in this act, the article of food, drug or liquor shall be subject to seizure, condemnation and sale by the Commissioner of Agriculture, as is provided for the seizure, condemnation and sale of commercial fertilizers; and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the treasury for the use of the Department of Agriculture in executing the provisions of this act; but no article or articles shall be sold in any jurisdiction contrary to the provisions of this act, or the laws of that jurisdiction: *Provided*, That the Commissioner of Agriculture shall have authority for the first offense to allow the shipment of such article or articles without the borders of the State. Violation of act a misdemeanor. Adulterated and misbranded articles subject to seizure. Proceeds to use of Department of Agriculture. Proviso.

SEC. 15. The provisions of this act shall not apply to drugs or articles of food on hand at the passage of this act. Articles on hand at passage of act.

SEC. 16. All laws in conflict with this act are hereby repealed.

When act effective.

SEC. 17. Except as provided in section fifteen, this act shall be in force from and after July the first, one thousand nine hundred and seven.

In the General Assembly read three times, and ratified this the 25th day of February, A. D. 1907.

FROM REVENUE ACT OF 1907—PEDDLER'S LICENSE TAX.

Section 44 reads as follows:

Definition of peddlers.

Any person who shall carry from place to place any goods, wares or merchandise, and offers to sell or barter the same, or actually sells or barters the same, shall be deemed to be a peddler, and shall pay a

Peddlers on foot.

license tax as follows: Each peddler on foot, twenty-five dollars for each county; each peddler with horse,

Peddlers with horse, ox, mule or vehicle.

ox or mule, with or without vehicle, or with a vehicle propelled by any other power, fifty dollars for every

Peddlers of medicines and drugs.

county. Each and every peddler of medicines or drugs, whether on foot or with horse, mule or ox, with or without a vehicle, or with a vehicle propelled by any other power, one hundred dollars for each

Itinerant salesmen.

county. Every itinerant salesman who shall expose for sale, either on the street or in a house rented temporarily for that purpose, goods, wares or merchandise, shall pay a tax of one hundred dollars in each county in which he shall carry on such business, whether as principal or as agent for any other person.

Application for license.

Every person mentioned in this section shall apply in advance to the Board of County Commissioners of the county in which he proposes to peddle or sell, for a license, and the Board of County Commissioners may,

Issuance of license discretional.

in their discretion, issue the license upon the payment of the tax to the Sheriff, which shall expire at the end of twelve months from its date. This section shall

Exceptions.

not apply to those who sell or offer for sale books, periodicals, printed music, ice, fuel, fish, vegetables, fruits, or any articles of the farm or dairy, or articles of their own individual manufacture, except medicines

County commissioners may exempt from tax.

or drugs. The Board of County Commissioners shall have power, at their discretion, to exempt from tax under this section any poor and infirm person or Confederate soldier, where the tax does not exceed fifty dollars for each county, and such license shall be good in any county in the State. Any person carrying

wagon, cart or buggy or traveling on foot for the purpose of exhibiting or delivering any wares or merchandise, shall be considered a peddler: *Provided*, That this section shall not apply to persons or their agents engaged in exchanging woolen goods for wool: *Provided further*, That this section shall not apply to drummers selling by wholesale.

Persons exhibiting or delivering wares classed as peddlers. Proviso: exchange of woolen goods for wool. Proviso: wholesale drummers excepted.

FROM REVENUE ACT OF 1907—DRUGGISTS SELLING LIQUORS.

Section 62 reads as follows:

Druggists dealing in spirituous, vinous or malt liquors, or medicated bitters shall, on or before the first day in June of each year, obtain a license upon the payment of twenty-five dollars to the Sheriff or tax collector. But any druggist who allows liquor to be drunk within his place of business, or sells liquors except upon the prescription of a practicing physician, as allowed by law, shall be subject to all the taxes levied upon dealers in liquors, and shall be guilty of a misdemeanor: *Provided*, That nothing in this section shall have the effect of modifying or repealing, in whole or in part, chapter two hundred and fifteen, Public Laws of one thousand eight hundred and eighty-seven, or chapter three hundred and seventy-five, Public Laws of one thousand eight hundred and eighty-nine.

Druggists dealing in liquors.

Certain druggists subject to tax as liquor dealers.

Guilty of misdemeanor. Proviso: laws not repealed.

LICENSED DRUGGISTS EXEMPT FROM JURY DUTY.

From The Revisal of 1905, Page 1976, Section 1980.

EXEMPTIONS FROM JURY DUTY.

No practicing physician, licensed druggist, telegraph operator who is in the regular employ of any telegraph company or railroad company, train dispatcher who has the usual handling of either freight or passenger trains, regularly licensed pilot, regular minister of the gospel, officer or employee of the State Hospital for the Insane, or active member of a fire company, shall be required to serve as a juror.

Code, SS. 1723, 2269; 1901, C. 118; 1897, C. 32; 1889, C. 255; 1885, C. 289.

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